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PRINCIPLES

OF

PHYSIOLOGICAL MEDICINE,

IN THE

FORM OF PROPOSITIONS;

EMBRACING

PHYSIOLOGY, PATHOLOGY, AND THERAPEUTICS,

WITH

COMMENTARIES

ON THOSE RELATING TO

PATHOLOGY.

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TRANSLATED FROM THE FRENCH,

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PREFACE

TO THE COMMENTARIES ON THE PROPOSITIONS RELATIVE TO PATHOLOGY.

When, in 1821, the second edition of the *Examination of Medical Doctrines* appeared, I was urged to make known the doctrine I professed, by publishing a treatise on pathology. Deprived of the leisure necessary for the accomplishment of so difficult a task, and moreover desirous that the doctrine should be submitted to the test of time, I reduced into aphoristic propositions, what appeared to me to be demonstrated truths, and I placed these propositions at the commencement of the edition above alluded to.

Having, in 1825, completed the *Treatise on Physiology Applied to Pathology*, which I published in monthly Nos. with the *Annals of Physiological Medicine*, the idea suggested itself to me, that, in order to facilitate the propagation of the new doctrine and to mature it as quickly as possible, it would be useful to illustrate by commentaries, those of the above-mentioned propositions which relate to pathology; that is, the second section of these propositions, that having been accomplished as relates to the first, in the *Treatise on Physiology*. I therefore commenced this task, publishing a sheet monthly with each No. of the Annals, and completed it in 1828.

In these commentaries, the reader will not meet with

those systems which are very improperly, in my opinion, called *a priori;* he will rather find a *method of observation,* which applies itself to all facts, which exacts of them nothing but authenticity, and which takes every precaution not to conduct those who confide in it, into false routes. This method is so simple in its application, the results which are obtained by it are so easily verified, and trials of it have been made so often and so generally in France and elsewhere, that no one can suspect its correctness. Assuredly it will not corrupt the mind of any one: it will neither make of those who will contemplate it, systematists nor enthusiasts; it will only render them more circumspect and prudent in the choice of the works they peruse, and in the adoption of a doctrine.

Much is said at the present day of eclectism. True eclectism, the only possible one hereafter, as I believe I have demonstrated in the *Dictionnaire Encyclopédique,* is the eclectism of facts. The physiological method is entirely founded on this eclectism—it every where seeks facts to subject them to strict examination and to determine what inductions can be drawn from them; and it does not execute this task in an insidious manner; it proceeds without mystery, without prejudice, without concealment, so that all those who love the marvellous and what is illusory will immediately abandon it.

It has been said that all systems have something good in them, and that it is necessary to endeavour to discover this good in each, and to select it, so as to construct of the whole a mixed system. This species of eclectism appears to me erroneous. We ought not to impose

upon ourselves the obligation of taking something from every system; what we should seek in the sciences is truth, and truth is in the facts. The art of verifying facts is then the art of seeking truth, and it is also the only eclectism that a correct mind can adopt. Where would be the utility, for example, to say, "I will positively find something good in the system of atoms and of pores, in that of the four elements, in the metempsycosis, &c.?" These systems, like all others, are only inductions, just or false, drawn from facts; for man invents nothing, whatever may be said. Now, instead of losing time in laboriously following the authors of these systems, in the manner in which they have viewed facts imperfectly known in their day, it is necessary to advert at once to these facts—to observe them anew—to verify—to confirm them. Nothing will be easier after that than to satisfy ourselves whether the symptoms which have been deduced from them are true or false.

This is what I have wished to do in the work which I at present submit to the judgment of the learned. I have faithfully related what I have seen concerning pathological phenomena, what I have done to remedy them, and what I have observed in the bodies of those who have died. Nothing is easier then at the present time, than to verify these facts, and to see whether the inductions which will be drawn from them, for man always forms some conclusions from what he has seen, are conformable to those which I have myself deduced from them.

I have thought it to be my duty to offer these remarks

respecting the nature of this work, on which I have constantly for four years laboured with my whole soul, with all the frankness and good faith of which I am capable, making it a duty to insert there daily the result of my practice and of my meditations. At present I conclude it with the consoling idea that the first sheets of it have not been useless to those of my cotemporaries who have written on pathology since 1825.

BROUSSAIS.

Paris, Dec. 28th, 1828.

PROPOSITIONS

IN

MEDICINE.

SECTION I.

PHYSIOLOGY.

PROPOSITION I.

Animal life can be supported only by external stimulants, (Brown;) and whatever augments the vital phenomena is a stimulant.

PROP. II.

Caloric, whatever may be its nature, is the first and most important of all stimulants; and if it ceases to animate the economy, others lose their influence over it.

PROP. III.

Caloric is necessarily and continually furnished to the embryon by its mother, and to the animal after birth by its lungs; but it penetrates casually by all the inlets. The animal derives it from two general sources, from the

media in which it is placed, and from foreign bodies received within it, including oxygen.

PROP. IV.

If the system be deprived of caloric for a certain length of time, all the preservative, recuperative, and sanative phenomena cease. It is the same also as respects oxygen.

PROP. V.

Caloric brings into play the unknown power, which constructs the organs. This power forms them from nutritive materials, and conducts free fluids into their interstices. The organs or the solids, as well as the fluids, are termed animal matter. We cannot conceive of this matter distinct from the power which regulates it and fashions it into organs.

PROP. VI.

The composition of the organs and fluids depends upon a chemistry peculiar to living beings. The unknown power which excites this chemistry into activity, endows the organs, in constructing them, with the faculty of movement by contraction, and as a whole endows them with the faculty of sensation. Contractility and sensibility are then the evidences or proofs of a living state: contractility belongs to all living fibres; sensibility is one of the modes of action of the encephalo-nervous apparatus.

PROP. VII.

Certain substances in nature, besides caloric, augment the sensibility and contractility of those parts of the organ-

ism with which they are placed in contact: this is stimulation or irritation; these substances are therefore also stimulants.

PROP. VIII.

Sensibility and contractility being augmented in one point, they quickly become so in several others: this is sympathy.

PROP. IX.

Sympathy takes place through the medium of a particular form of living tissue, or of animal substance, termed nervous matter.

PROP. X.

All the phenomena of association are accomplished by the agency of this matter in the cerebro-spinal apparatus and in the nerves, by the transmission of the stimulation of one part to another, or several others: these are the sympathies.

PROP. XI.

The complex object of the primary as of the secondary stimulation, is always nutrition, the removal of destructive agents, and reproduction. The actions that produce all these are divided into several series, each of which is performed by a certain number of organs, and is called a function. For the performance of functions it is necessary that the fluids concur with the solids: in every stimulation there is then impulsion, afflux or attraction of fluids to solids.

PROP. XII.

Sensibility and contractility are distributed in various degrees to the different organs that compose the living body. Those which possess them in the highest degree, receive the action of stimulants immediately and transmit it to others: they are then the natural movers of the sympathies.

PROP. XIII.

The organs that may be considered as the natural movers of the sympathies, are those in which the nervous substance has a pulpy appearance, intermixed with sanguine capillary vessels and with other vessels that contain albuminous or gelatinous fluids: these are the skin, and the cerebral senses, termed external senses; also the mucous membranes, which are the true internal senses.

PROP. XIV.

All the organs of the senses, as well external as internal, are subjected to the action of exterior agents, and to those other agents which arise from the interior. The stimulation that the organs receive from these agents propagates itself progressively and in every direction in the nervous substance, and when it is sufficiently strong, it is transmitted to the brain, the centre of the animal nervous matter. It is the same with stimulations that originate in the interior of the tissues, and which result from the performance of functions either in a normal or abnormal state.

PROP. XV.

Every stimulation sufficiently intense to reach the brain, traverses the whole system of relation. It is then repeated in all the viscera which supply to the brain new causes of stimulation. Such is the origin of the necessities which determine the animal to action. This action is performed sometimes unconsciously, at others with consciousness: in the first case it is a low instinct, and without pleasure or pain; in the second, it is either simultaneously instinctive and intellectual, or entirely intellectual. In these two last conditions it is executed in consequence of the pleasure or pain which the animal experiences, and has always for object either to continue or repeat the stimulation, or to remove the cause of it, or to preserve the system from its action.

PROP. XVI.

The action willed by the centre of relation, that is, by the brain, is performed by the impulsions which it gives to the respiratory and locomotive muscular apparatus by means of the nervous matter intervening between it and this apparatus.

PROP. XVII.

While an impression, or rather the stimulation resulting from an impression, traverses the nervous apparatus of the viscera, it produces movements in the muscles which form a part of these viscera, modifies the circulation of all the fluids which pass through them, and even produces involuntary contractions in the muscles of respiration and locomotion.

PROP. XVIII.

While the stimulating influence of the brain is exercised, either voluntarily or involuntarily, upon the respiratory and locomotive muscles, the stimulation is also communicated, but involuntarily to the muscular and vascular tissues of the viscera, because some of the nerves of relation are common to the respiratory and locomotive muscles and to the viscera.

PROP. XIX.

The voluntary movements having brought the nutritive materials in contact with the organs of assimilation, the latter assimilate them to the individual.

PROP. XX.

Assimilation is a phenomenon of the first order, which cannot be explained by the action of sensibility and contractility: it can be ascribed only to the creative power, (vis creatrix naturæ,) and is one of the acts of vital chemistry.

PROP. XXI.

Absorption depends in the first place upon the affinities of vital chemistry; in the second place upon the exercise of sensibility and contractility.

PROP. XXII.

The circulation is under the dominion of the sensibility and contractility of the heart and vessels, until the branches

of these latter dimish to a point of diminution which it is difficult to determine: beyond this point, and where the extravasated fluids circulate in the areolar tissue, they are moved partly by the heart, partly by the contractile movements which are produced by local irritability, and partly by the affinities of vital chemistry, which the creative power constantly directs. The same is true of the causes of the movements of the fluids in the organs called secretory.

PROP. XXIII.

While the fluids are circulating in the meshes of any part, the composition and decomposition of those parts and the formation of the fluids which are to remain a longer or shorter period in their interstices, are effected. These three phenomena which constitute nutrition, belong essentially to vital chemistry, because the function of sensibility and that of contractility is limited to offering to the organs the assimilated materials, and to eliminating the fluids that are unnecessary to composition and those which have been set free by decomposition.

PROP. XXIV.

While the fluids are moving in the tissue of the glands, besides nutrition, certain changes are effected in the form of the fluids which are not employed in this function, so that each gland furnishes a fluid of its own, with peculiar characters: these changes belong to vital chemistry. Sensibility as well as contractility serve here only to eliminate the newly-formed fluids, to convey them to the exterior if they are useless, or to deposit them on the mucous surfaces if they are to concur in the performance of any function.

PROP. XXV.

The formation of the embryon is the effect of vital chemistry: sensibility and contractility convey the embryon into the uterus: vital chemistry developes it and gives to it its peculiar sensibility and contractility, (see Prop. VI.) the sensibility and contractility of the mother effects its expulsion.

PROP. XXVI.

There is an order of nerves situated along the vertebral column, and in the midst of the viscera, which have for their centre, ganglia that are peculiar to them; the whole is called the great sympathetic: it is better to call them ganglionic visceral nerves.

PROP. XXVII.

The ganglionic visceral nerves penetrate into the viscera and muscles with the vessels and nerves of relation; but they are very numerous in the viscera and muscles of the trunk, and few in number in the muscles of the limbs.

PROP. XXVIII.

A wound of the ganglionic visceral nerves does not primarily produce either pain or convulsions; they do not transmit sensations to the brain, nor volition from the brain to the organs.

PROP. XXIX.

The ganglionic visceral nerves preside only over those internal actions which the cerebral centre does not direct. Mingled with the capillary system of the viscera, they serve to regulate and transmit stimulation from one part to another, according to the necessities of the creative power, that is, they are particularly subservient to vital chemistry.

PROP. XXX.

The ganglionic visceral nerves receive, independently of the will, the stimulating influence of the cerebral nerves, and render it subservient to movements independent of the centre of perception. Thus the will cannot withdraw the stimulation which it has transmitted to them by the exercise of the function of relation.

PROP. XXXI.

The ganglionic visceral nerves render the vital force of the animal, that is, the action of which it is capable, subservient to vital chemistry, independently of the influence of the will; and when the amount of this force no longer suffices for these two great orders of functions, they abstract it from those of relation to concentrate it in the nutritive functions. They accomplish this diversion by accumulating innervation, and with it the fluids, in the capillaries of the viscera and especially in those of the brain. Sleep is probably produced in this manner.

PROP. XXXII.

When action predominates in the viscera, the ganglionic nerves reflect it to the apparatus of relation by means of the cerebral nerves with which they are in communication in the same viscera; and it is no more in the power of the will to reject this action, than to withdraw from the viscera that which the brain has transmitted to them.

PROP. XXXIII.

The centre of relation by the influence of the viscera, excites with or without the concurrence of the will, with or without the consciousness of *self, (moi,)* movements in the locomotive apparatus, which are in direct relation to the visceral irritations, and which terminate either in the cessation of these irritations, or the engorgement, compression, or finally disorganization of the brain.

PROP. XXXIV.

Whenever a stimulation capable of affecting the cerebral nerves is excited in the animal economy, it is transmitted to the centre of relation, and the latter is made to perform movements in consequence, either with or without consciousness, with or without the volition of the animal; but the phenomena of consciousness which are designated by the term *self,* are not continuous, whilst the stimulation and reäction of the centre of relation are so. (See Prop. XV.)

PROP. XXXV.

The stimulations of the nervous centre, of which the *self* has cognisance, are named perceptions, and indicate the existing state of sensibility; the actions which this centre directs with consciousness, are called voluntary. But the stimulations of the cerebral centre, of which the *self* has no cognisance, and the actions which it excites without the participation of the *self*, are not attributed either to the sensibility or the will; they are a peculiar species of organic phenomena, of the lowest instinct, (See Prop. XV.) The cerebral nervous apparatus presents then two modes in its functions. This fact is here recalled as applicable both to physiology and to pathology.

PROP. XXXVI.

Whenever the *self* has a perception, it feels at the same time in the brain and out of the brain. (See Prop. XV.) But the points out of the brain where the *self* may perceive are not only the external and internal senses, they are also the accidental foci, (foyers,) of inflammation; for inflammation places the extremities of the nerves of relation of most of the tissues in a state nearly analogous to that of the nervous extremities which form part of the normal sensative surfaces. These foci of inflammation become then accidental abnormal senses.

PROP. XXXVII.

The *self* has the power of refusing to execute certain acts which the sensations excited in it by the natural and

accidental senses incite it to perform; but there are others the performance of which it can only delay for a longer or shorter time.

PROP. XXXVIII.

The *self* does not possess the faculty of retarding or preventing the execution of acts which the sensations require of it, except when the encephalic apparatus is advanced in its development, and in a waking and healthy state. This faculty does not then exist in infancy; afterwards it grows with the exercise of the understanding; in sleep, in insanity and other morbid states, it presents numerous varieties.

PROP. XXXIX.

The acts which the *self* can only retard are solicited by sensations arising from the viscera essential to life, and which relate to the urgent exercise of their functions.

PROP. XL.

Among these acts which the *self* can refuse to execute, some are solicited by the wants of viscera essential to life, but these wants are not urgent: if they become so, either the *self* obeys, reason is lost, or death supervenes. The other acts relate only to the execution of functions which are not necessary to the preservation of life, but the refusal of the *self* may, even in this case, produce insanity.

PROP. XLI.

When the animal suffers and dies from having refused

to satisfy the wants of the viscera, it is the triumph of intellect over instinct. But when mental alienation is the consequence of the resistance which the *self* opposes to the wants of the viscera, that is, from the super-irritation which they have excited in the brain, it is the triumph of instinct over intellect.

PROP. XLII.

Instinct consists in nervous impulsions or stimulations, with or without consciousness, proceeding from the viscera, and which solicit the nervous centre to perform acts necessary to the exercise of the functions.

PROP. XLIII.

The acts solicited by instinct are often performed without the participation of the *self*, and even in its absence. Examples of this are found in the fœtus, during sleep, &c.

PROP. XLIV.

The acts solicited by instinct predominate in the infant, and diminish in proportion as the intellect becomes perfected.

PROP. XLV.

The intellect manifests its influence upon the organism by the modifications, which it causes in the sensations, determined by instinct, and in the acts which the latter solicits.

PROP. XLVI.

The passions are sensations excited at first by instinct, but afterwards fomented and increased by the attention bestowed on them by the intellect, so as to become predominant, and to determine actions more or less remarkable, and always directed to the gratification of the instinctive want, from which they first originate.

PROP. XLVII.

The passions are like insanity, the triumph of the viscera, and consequently of instinct over intellect; thus they often produce mental derangement.

PROP. XLVIII.

In the passions there are always united instinct and intellectual faculties.

PROP. XLIX.

Instinct may be exercised with or without the intellectual faculties.

PROP. L.

The intellectual faculties have always an admixture of instinct.

PROP. LI.

The intellectual faculties may be exercised without passion, but never without a mixture of pleasure or pain.

PROP. LII.

The pleasure and pain that accompany the intellectual faculties, have the same seat as the pleasure and pain that accompany the passions, because the centre of relation cannot perceive in the brain without perceiving in the extra-cranial nerves, and it is always in the latter that its perceptions are the strongest.

PROP. LIII.

When the intellect is occupied with ideas relative to the wants of a viscus, or to the functions of a sense, the nerves of this viscus or sense are always in action, and transmitting sensations to the centre of relation; from this it results that the destruction of the nerves of any sense brings on by degrees the abolition of the ideas obtained by its means.

PROP. LIV.

An acephalous fœtus may live; but it dies when it is born, because it wants the influence of respiration, which depends upon the brain and spinal marrow.

PROP. LV.

Organs whose communication with the brain is cut off, quickly lose their vitality and their nutrition, wither, and die. But this is rare; for in paralysis, resulting from affection of the brain, there is still some communication with this viscus; but as the principal communication takes place by a diseased point only, and the others by anasto-

moses of small nervous cords, these influences are incapable of maintaining action to an adequate degree.

PROP. LVI.

It is not from the want of a particular principle, of which the brain should be the secretory organ, that the paralysed apparatus of motion withers, but from want of excitation and exercise, whatever may be the subtil agent that pervades the nervous substance in the phenomena of innervation.

PROP. LVII.

The want of action in paralysed muscles does not arise immediately from the inaptitude of their nerves to excite motion, it arises from the want of a sufficient communication with the brain; but when nutrition has languished during a long time in a paralysed part, its nerves deteriorate, and are no longer fit to excite action.

PROP. LVIII.

The access of oxygenated blood to paralysed parts, may maintain nutrition in them, because there is still a little communication with the brain, but the want of exercise renders this nutrition more and more feeble, without causing death of the part.

PROP. LIX.

A free and continual communication of excitement, in all directions, between the different parts of the body, by means of nervous substance, is indispensable for maintaining the equilibrium of the functions.

PROP. LX.

In hot seasons and climates, the external surface of animals is more excited than their internal surfaces; in cold seasons and climates, their internal surfaces receive greater excitement than their external. The gastric surface becomes then the principal seat of excitation, and this is the reason why nutrition is more considerable.

PROP. LXI.

Excitation is never uniform in the whole system; it is always greater in certain parts, less in some others, and predominates successively in different regions. This inequality often terminates in derangement of the equilibrium of the functions.

PROP. LXII.

Health is never impaired spontaneously, but always because the external stimulants destined to sustain the functions, have accumulated excitement in some particular part, or because they are deficient in the system, or because the system has been stimulated in a manner which is repugnant to the exercise of the laws of life; for there exists certain relations between the exterior modifying agents, and the whole or the different parts of the organism, so that some favour, others contravene vital laws, and these latter are poisons.

PROP. LXIII.

Certain external modifying agents diminish the pheno-

mena of life in the organs with which they are in relation; but the pain which is developed in the debilitated part performs the office of an excitant which recals the vital phenomena, sometimes in a favourable manner, at others in a manner unfavourable to the conservation of the animal.

PROP. LXIV.

The excess of hematosis or of sanguification augments the sum of vitality, but this progression has a limit beyond which excitement accumulates in an organ, and disease takes place from the excessive super-irritation of that organ.

PROP. LXV.

Excitation accumulates also in the organs by the influence of exciting modifying agents, although the sum of the general vitality is much diminished; and this state may persist until marasmus or death occurs.

PROP. LXVI.

The animal economy never supports excessive super-irritation with impunity; and all those who appear the most habituated to very powerful stimulants, finally experience excessive local super-irritations.

SECTION II.

PATHOLOGY.

PROP. LXVII.

Health supposes the regular exercise of the functions; disease results from their irregularity; death from their cessation.

PROP. LXVIII.

The functions are irregular when one or several of them are performed with too much or too little energy.

These two propositions indicate the principles upon which the whole physiological doctrine must rest. It is immediately perceived, that the author makes health to consist in equilibrium; and as equilibrium is here attributed to the proper portion of vitality of each apparatus, this creed necessarily excludes the humoral, chemical and mechanical theories, and even the system of Brown, since Brown based his entirely on the augmentation or diminution of life, considered in an abstract manner, and as an unit, indivisible and as entirely insusceptible of the two opposite modifications. The physiological doctrine is not then *Brunonism revived.* These two propositions also exclude empiricism, and systems of classification founded upon groups of symptoms without reference to the diseased organs. It is evident, that essential diseases, whose seat is not indicated, or diseases attributable to an uniform modification of all the organic apparatuses, cannot enter into the doctrine. An exaltation of vitality in some organs, a diminution of it in some

others, is the principle of the morbid state. The uniformity of the modification is established solely by the progress of the disease, and most commonly at the approach of death.

PROP. LXIX.

The energy of a function is excessive, when it accelerates, suspends, or denaturalizes the others, in such a manner that one or several of the organs which perform the deranged function and those which it deranges, are menaced with destruction.

This proposition embraces all the primary diseases of irritation as will be subsequently developed. It is evident that the evil does not consist as Brown supposed, in the augmentation of the sum of the forces, but in some organs enjoying an exalted vital action which deranges the equilibrium. But is it entirely certain that all diseases of irritation depend on exaltation of the functions? This will be discussed in treating of irritation.

PROP. LXX.

The energy of a function languishes, when one or several of the organs, which perform it, do not enjoy the degree of vitality necessary for the proper execution of the function.

This proposition comprises all the primary diseases of abirritation: the evil does not consist in a general and uniform diminution of the sum of vitality, but in some organs being more weakened than others: it is a destruction of the equilibrium by a cause the reverse of that of diseases of irritation.

PROP. LXXI.

The vitality of organs may have been exalted before being diminished, and vice versa.

In this proposition, all the diseases of abirritation consecutive to those of irritation, are indicated; such is the state of an organ deteriorated by inflammation or weakened by the shock, and all those dependent on a reäction, which not only restores to the organs the vitality of which they have been deprived, by the action of a debilitating cause, but which furthermore increases it to the degree of morbid irritation, that is, to a degree capable of deranging the equilibrium. This last occurs whenever an organ weakened by cold, is heated again by reäction to the degree which constitutes phlegmasia; and also in cases in which the stomach, long deprived of its natural stimulus, (food,) or debilitated by articles which do not sufficiently stimulate it, is exalted by vital reäction to a degree of excitement which terminates in inflammation. Many analogous cases exist, an idea of which may be formed from the examples just given. This proposition, which relates to etiology, recalls to mind what has been said respecting the vital laws in the treatise on physiology applied to pathology.

PROP. LXXII.

There cannot be either a general and uniform exaltation or diminution of the vitality of the organs.

It is difficult to understand how it has happened that this question has not been earlier propounded; it is of such importance as to alone overthrow the whole edifice of ancient medicine and all the modern systems of nosology, since there are none of them which do not admit of general diseases. It gives a fatal blow to the doctrine of the Italian diathesists, which cannot henceforth be sustained by any one who is able to reason. It is sufficient to carefully examine a patient attacked with one of those affections given as the type of the morbid essentiality, a fever for example, to be convinced of all these truths. This examination was daily repeated, during a long period, in the clinical wards of the Val-de-Grace, during the origin of the physiological doctrine, and it was observed that this result never failed to take place. A man presents himself with a violent fever, complaining of no

fixed pain, but of a general suffering in his whole body; that is, of experiencing a state of uneasiness to which he cannot assign any particular seat. After having examined him, the professor remarked to those who were present—here you see one of those fevers which authors term essential, that is, dependent upon an uniform modification of the organs. Examine the skin, it is not inflamed; feel the abdomen, you will find that the peritoneum is not affected; press upon the cellular tissue, you will find no phlegmons in it; move a joint, you will satisfy yourselves that it is not inflamed, neither are the ligaments, the bones, nor the cartilages; press upon a subcutaneous nerve, you will not find it inflamed, although it may be more sensible than in the normal state.

The symptoms of angina, ophthalmia, pulmonary phlegmasiæ, cephalitis, urethritis, cystitis, &c. are known to you; you do not discover any of them in this patient. Here then are a number of tissues which are not inflamed: but if it is true that all the organs are modified in the same manner, it is not necessary that there should exist a single one in a state of inflammation. However, let us examine the mucous membrane of the alimentary canal; it has lost its aptitude to digest solid food, and if the patient takes any, the stomach will become painful and the fever will be augmented; this membrane is then more irritable than previously. When in health, warm drinks are pleasant to it; now it rejects them, and cold drinks only are relished; it is then more heated than previously to the fever. If the patient suddenly dies from any accident, as for example, he commits suicide, which sometimes happens, you may satisfy yourselves that this membrane is red and tumefied; but in default of a post mortem examination, you have the sympathies to guide you. The tongue represents to you the condition of the inner membrane of the stomach; the tongue is much redder than it was previously to the accession of the fever, and its investing membrane is tumefied; the inner membrane of the stomach must then be in the same state. This membrane is therefore both hotter, redder, more tumefied, and more sensible than in the normal state; it consequently reünites the four characters of inflammation which you have not discovered in the other tissues. The modification of

the economy is not then uniform, the disease therefore is not *totius substantiæ*, and when the patient says, I have a *general suffering*, he suffers in fact only in the inflamed apparatus, in the brain, and in the nerves of relation. The question of priority is now to be decided: is it the fever which has produced the inflammation of the lining membrane of the stomach, or is it this inflammation which has produced the fever?

To answer this question, it was necessary to go back to the phenomena which presented themselves at the commencement of the disease, and to exhibit many patients affected in the same manner, some of which were treated by means known to be stimulating to the stomach, and other cases treated by medicaments of opposite properties. It was necessary also to oblige the pupils to make the same observations during the course of the disease, and to prove that the fever constantly increased and diminished exactly as the stomach was subjected to sedative and stimulating modifications; finally, to complete the demonstration, it was necessary to show, in case of fatal termination, this redness, foretold during the life of the patient, and to prove that the brown colour, when it occurred, had been preceded by the red colour. It is thus that we arrive at a disbelief of the essentiality of all fevers, that is, the dogma of the uniformity of the modification of the organs in acute diseases.

In chronic diseases it may be proved in the same manner by an analytical examination of the functions, that the debility, the loss of colour, the sallowness, the imperfect assimilation of the humours called cachexy, depend on the primary affection of one apparatus; and frequently the cure of the patient, effected entirely by the modification of this apparatus, completes the demonstration, by showing to the observer the return of the forces, the natural colour, and the perfect assimilation of the fluids.

Thus one of the principal axioms of the physiological doctrine, that *all diseases are primarily local*, may be rigorously demonstrated. It is now understood why this demonstration was necessary to enable us to prove that the physiological doctrine had borrowed nothing from the modern Italian.

In fact, the physicians of that country admit as the principle of all diseases from an internal cause, that is, independent of

external violence, a diathesis or general disposition of the system. This diathesis is necessarily sthenic or asthenic: it is common to all the organs, but it manifests itself more particularly in one of them. From this latter part a *processus* extends itself to all the others and the disease becomes general. Now, before commencing the treatment of a disease, the nature of the diathesis is to be determined. But how are the Italian physicians to accomplish this? Are they to found it upon the augmentation or diminution of the general sum of the forces, as Brown did? No, for they have admitted the possibility of the sthenic diathesis in a person in whom the degree of excitement is less than that of which his constitution renders him susceptible. Are they to make the diseased organ the basis of it? No, the organ has nothing to do with the diathesis, since its sufferings are only the expression of the diathesis. Shall they decide from the name given to the disease by their predecessors? The name cannot decide the question, since all the epithets given previously to their day are not admitted by them. It is the diathesis which must determine the name. Whence then can they derive a knowledge of the diathesis? They can obtain it only, according to themselves, by the influence of therapeutic agents. They say, we have cured such a disease by stimulants; it was then of an asthenic diathesis; such another has yielded to the employment of debilitating remedies, it was then of a sthenic diathesis. They tried then, in actual practice, the employment of these two orders of remedies, and the disease after its termination is referred to one of these two diatheses, and receives a definite denomination.

The fault of this theory is easily understood; the disease is known only when the proper time for knowing it is past. But will it be said, they are enabled to recognise the case before them by a comparison with those which they might have already observed.

Well, let us go back to the first who made use of this method. Destitute of preceding observations, instituted with a similar import, he must have groped his way, and determined only after fruitless and often fatal trials. Here is a fine model for his successors!... That they may be able to

profit by it, we must suppose that this first *diathesist* has so accurately determined all the cases of success and failure of these two orders of remedies, and has so perfectly ascertained the symptoms which characterize them, that no one after him will be compelled to attempt the same trials, in order to determine the diathesis. But who is the great man who has rendered so eminent a service to science? Is it Brown, the famous inventor of these diatheses? Certainly not, since the modern Italians have abandoned his practice, asserting that he is mistaken, and that instead of ninety-seven diatheses out of a hundred being asthenic, there are but three of them, and that the remaining ninety-seven belong to the hypersthenic.* Is it Rasori, the not less famous author of the *contra-stimulant doctrine?* It cannot be him, since his supposed contra-stimulants are true stimulants, from the use of which such unfortunate results have been obtained, that the wisest physicians of Italy are obliged to abandon it, and as all the trials made with these remedies in France have served only to destroy the little confidence that might still be reposed in them. Will any one say that it is Tommasini? This author is essentially a diathesist, and the ninety-seven diseases which he believes sthenic, are neither localized nor treated by the antiphlogistic method; but without going further, it is sufficient to form an opinion of him by the treatment which he adopted in the case of his own child, affected with enteritis, an account of which is contained in the "*Journal Universel des Sciences Médicales,*" Vol. XVI. p. 73. We there observe the groping in the dark, of which we have just spoken, the trial of a multitude of highly injurious stimulants, the urgent necessity of correcting their effects by bleedings and cooling remedies, and the recurrence to incendiary measures, dictated by the impatience of the physicians, who were astonished at a more prompt cure not being effected. As to the other celebrated physicians of Italy, they know nothing more respecting the diatheses, and those among them who have abandoned the diatheses, have gone back to the ancient systems, or indeed embraced the physiological doctrine.

* It is then these gentlemen who have *revived Brunonism.*

It is then very certain, that the diathesists have no fixed basis, and an examination of their practice proves that their theory could not furnish them with one. After having abandoned the practice of his master, Brown, Rasori did nothing but recur to that of the ancient physicians; and at present, if I may judge from a letter which I have received from Milan, he has returned to the use of bark and spirituous liquors, that is, to the practice of Brown. He bestowed the epithet of *contra-stimulants* on drastic purgatives, and this name encouraged him to administer them in enormous doses. At present he gives the same title to the most incendiary remedies, and uses them lavishly, with the same temerity. Every theory that can suggest such a practice, can have nothing fixed, and does not merit the name of a doctrine.

The diathesis not having furnished them the means of attaining their object, the Italian physicians had recourse to subtleties. They admit the possibility of a *processus* setting out from a point, without a preëxisting diathesis; and this *processus* establishes in the system a diathesis of its own kind; consequently sometimes sthenic, at others asthenic. Here the same error exists as in the preceding suppositions. This *processus* signifies nothing, since it is considered as producing an uniform modification of the whole system; and besides, what is a *processus* which is vaguely conceived to exist in the organs? what does this entity represent to the mind? Is it the irritation transmitted from one organ to others? but we shall elsewhere see that all the organs do not receive this irritation, and that those which do not, may be in a state of abirritation. Moreover, it is not what we understand by irritation that they mean; it is the stimulation arising from an organ inflamed by external violence and propagated to other organs. They cannot conceive of a spontaneous affection without either general or local diathesis, and do not admit of any parity between the action of an atmospheric, alimentary, or medicamental irritation, and the action of a body which produces a wound; a parity which we have clearly demonstrated. Their diathesis is an emanation from the doctrines of Stahl and Van Helmont; it is the idea of an internal occult power, which determines a disease, plans it, prepares it, and modifies all the organs, so that it may be produced as soon as an occasional cause shall act. It is

this principle, of which the local affection, when they acknowledge one, testifies the injurious intention; it is this principle which they propose to attack, sometimes by their stimulants, and at others by their contra-stimulants. If they have had in view only to destroy an irritation, an inflammation which impaired an organ and threatened to attack the others, they would have adopted the common language; they would have said:—We give sedatives, antiphlogistics, and cooling remedies; they would not have required, that the diathesis should be discovered: the simple fact of the existence of irritation would have demonstrated that to them. If they had only called to mind the state of the inflamed organs in fevers, they would have had no need for those perilous experiments which they ventured to institute; they would have at once understood why stimulants exasperate the disease; they would have forever abandoned their use; and because a patient has the good fortune to recover his health after numerous accidents, developed by the employment of their pretended contra-stimulants, they would not have concluded that they had cured him, and that it is necessary to treat in the same manner all those who shall present the same symptoms.

This idea of a diathesis analogous to that of a material cause, of one or more archæi, was also entertained by Barthez; that is, the idea of a vital principle, alone affected in internal diseases, alone culpable of all the accidents which accompany them, and alone able to bear the modifications which therapeutic agents may produce. But all this is not the physiological doctrine, since the former rests upon hypotheses, and not upon the real state in which each organ is found in disease.

Bordeu is the first author who presents the lineaments of our doctrine. This is shown in the opinion that each organ is endowed with a particular vitality, and that the ensemble of their actions constitutes general life. But this idea, which is not strictly true, is not extended by the author. He admits of sympathetic associations, (concours synergiques,) of crises, of very prolonged diseases, and he made stimulating medicaments play a very conspicuous part, not with the intention of inducing revulsion, for the relief of the principal organs, but to promote the efforts of the *vis medicatrix naturæ*. We also discover here, then, the

predominance of the parent idea of the animists; and although Bordeu has furnished useful materials for the erection of a physiological doctrine, he is far from having constructed one. The entity vital principle, the entity disease, reigning one and the other over the organs, and modifying them, should alone fix the attention of the physician, whilst the surgeon may dispense with consulting them; such are the fundamental ideas of the pathology of all the dogmatists. But this idea constitutes, as we shall moreover see, the medical ontology which reigned in France until the era of the physiological doctrine, and which still prevails at the present time in all countries where this doctrine is not received.

We have demonstrated that the physiological doctrine is founded upon a new idea; that it has nothing in common with those which have preceded it, and that it cannot be an emanation from them. The subsequent *propositions* will furnish us with an opportunity of following up its development and of observing its applications.

PROP. LXXIII.

Exaltation always commences in one organic system, and is communicated to others, either in the same apparatus or elsewhere.

Every tissue of the body may be directly irritated by external violence and transmit the irritation to others; but there are a certain number of them which have been destined by nature to receive the immediate action of external agents independent of those which wound: these are the external senses and the mucous membranes which we consider as internal senses. See the illustration of this in the *Treatise on Physiology applied to Pathology*. There is no disease of irritation which does not owe its origin to the stimulation of one of these tissues. We live solely by stimulation; we are incessantly subjected to the action of three important influences, viz. that of the air which acts upon the lungs and skin; that of the food and drinks which daily enter with the air into the alimentary canal; and that of the moral affections, of which

the senses have always been the means of introduction. These different surfaces do not always preserve the super-irritation which they have received; and this super-irritation has a tendency to follow in its transmission certain directions, which are those of the sympathies. We will examine them in their proper place, but there is no tissue, except in cases of lesion, which does not receive the stimulation of these same organs of relation. Let us examine the deepest, such as the cellular tissue entering into the composition of the viscera, that connecting the lymphatic vessels, the serous and fibrous tissues, and the bones. Before morbid irritation manifests itself in them, the organs of relation have always suffered; but we are ignorant why they have transmitted the excitation to one of these tissues rather than to another. We explain the difference by a predisposition; but why does it exist? We see it, sometimes for example, when a tissue has been wounded, when a tissue is constitutionally very irritable, as the lymphatic in scrofulous persons, or when it is near to that which has received the primary irritation: but this light is often wanting; for example, in a person affected with phthisis, a phlegmon forms in the midst of a part without being produced by any external cause. We see indeed that the viscera are super-irritated by the blood, and that they are too sensible to the action of external agents, which may equally happen without plethora; this is irritation. But we do not know why it abandons its first seat to fix itself where the abscess is about to form.

Some physicians believe in the existence of spontaneous derangements of nutrition which tend to form tubercles and other organic alterations in the tissues, without immediate relation with external agents. If these physicians were correct, proposition LXXIII, would not be true; but if we elucidate the obscure cases upon which they rest, by those which are evident, we will constantly find that the organs of relation have suffered irritation for some time before these organic derangements were manifested: this leads us to believe that it is from not having examined well, or sufficiently observed, that these physicians have admitted the spontaneousness and independence of the affections in question. We do more: we elucidate isolated facts by the mass of facts, as will be seen by the explanation of the proposi-

tions relative to these diseases, and our conclusion is, that the irritation of the tissues of relation precedes that of the tissues which nature has subtracted from the immediate influence of external agents. We allude here only to the diseases of irritation of these organs, for it seems to us impossible to call in question the necessity of primary stimulation for the production of visceral phlegmasiæ and the fevers called essential, which can be nothing else but the inflammation of the organs of relation determined by the very fact of this relation.

Are the diseases of youth an exception to the rule we have just established? We think not, since irritation always commences in the visceral apparatus. We have met with adolescent individuals who became sick in consequence of extremely rapid growth, and we have remarked that it developed itself first by irritation in the digestive apparatus; that the heart, the lungs, and the brain participated in it, as being closely associated with this apparatus, which exposed at first all the tissues to inflammation; that afterwards when the phlegmasiæ became predominant in the other tissues, they were excited to it either by the influence of the preceding or by some immediate stimulations which acted as exciting causes, such as a blow, a fall, muscular exertion, the action of cold or heat, &c. In this state of the system, all the tissues are irritable, but the increase of the stimulation which causes phlegmasiæ in them, always takes place in the surfaces of relation which are naturally in contact with external agents, or is produced by violence, which may indifferently act upon the whole of the living body. If the irritation is developed in a limb that has undergone too violent exercise in some of the secretory vessels which have been excited to increased secretion, it is always evident that these extraordinary actions owe their first origin to the stimulation of a surface of relation. We think then that Prop. LXXIII, cannot suffer any exception, and we maintain it as it is expressed.

PROP. LXXIV.

The nature of the exaltation thus communicated, is the

same as that of the primitive exaltation. It is always the augmentation of phenomena which attests the state of life.

This proposition has reference to foci of irritation already established; whatever may have been the phenomena which preceded them, irradiations take place from them which extend throughout the economy. But the manner in which these irradiations exalt the vital phenomena in the tissues that receive them is consonant to their organization and functions; they are therefore of the same nature as that of the principal focus. The importance of this proposition will be perceived, and an idea will be formed of all the changes it occasions in the theory of diseases, when it shall be developed in the propositions relative to the sympathies.

PROP. LXXV.

The exaltation of one or several organic systems, or of one or several apparatuses, always produces languor of some other system or apparatus.

In fact, the peculiarity of irritation is to produce debility; otherwise it must be admitted that the vital exaltation of an organ may not implicate any of the others, or at most only occur in the same degree in them. But it is only extremely circumscribed and very slight irritations which do not produce debility; in every species of tissue, those which are sufficiently powerful to awaken the sympathies, occasion debility. Thus when the heart and the vascular system are super-excited, it always depends on visceral irritations that produce the uneasiness, that is, the pain; then the muscular innervation diminishes. When the locomotive apparatus is in a violently convulsive state, the action is deficient in the vascular system; the secretions are forgotten, nutrition languishes, and the heart directs the circulation of the blood in a defective manner. The nervous force, diffused in the muscles, is wanting in the brain for the performance of intellectual phenomena. When these are exalted, as in certain derangements and in anger, they are only so in a partial manner;

the heart and the muscles have simultaneously acquired more energy, the force is wanting as regards the attention, the association of ideas, and judgment; but there is always a suspension of action in some of the secretories or in some regions of the visceral muscles, the large intestine is dry and inactive, nutrition is imperfectly performed; the internal exhalations are suspended, and the sero-cellular tissues are in a state the very reverse of inflammation; the cartilages and the bones are destitute of all species of excitement. In short, it is not possible, I do not only say to meet with a general excitement of the phenomena of life, but to find a single case of hypersthenia which is not accompanied with asthenia of several of the organs. This proposition therefore destroys the theories of diatheses and *processus*, which depend on a uniform action in the economy; it also corroborates Prop. LXXII, and fully proves that the physiological doctrine of France is neither copied from ancient nor modern Brunonism.

PROP. LXXVI.

The diminution of the vitality of one system, or of one apparatus, *often* produces the exaltation of one or several others, and *sometimes* a diminution of vitality in them.

This manifestly refers to primary diminutions of the vitality. Let us take for example the action of cold; it debilitates the exterior, and the viscera then experience an increased action. The same takes place in hunger, which super-excites the brain and the stomach itself, and in losses of blood which occasion convulsions, &c.; but the author has said *often*, and italicized it, because there are cases where the primary debilitation is not followed by reäction; for example, the subtraction of oxygen, in debilitating the lungs, weakens the whole economy; the abstraction of blood from the vascular system of a dying person, or one who is very much enfeebled, occasions death without any organ being super-irritated, &c. Hence when the proposition only says *sometimes* the diminution of action in a system or apparatus induces the

debility of others, it still expresses the same fact, and it would be useless to say more on the subject.

PROP. LXXVII.

The exaltation of the vitality of one system, (and still more of one apparatus,) always pre-supposes an action, resulting from modifying stimulants, superior to that which maintains health; that is to say, a super-stimulation or super-excitation.

This proposition rejects spontaneïty without an appreciable cause, in diseases of irritation. This dogma, too dear to medical fatalists, is not admitted in the physiological doctrine. We have heretofore indicated, page 36, the tissues of relation by which irritation enters the system; whenever it attains a certain degree, and this degree varies according to the constitution of the patient, the vital erections are changed into super-irritation, and this produces a neurosis, a phlegmasia, a hæmorrhage, or a sub-inflammation. It is very interesting to observe our organs in relation with the causes of the excitement. For a long time the vital power, or rather the exercise of the laws of the economy sufficed to reëstablish the equilibrium, by causing a cessation of the vital erection, a shorter or longer period after the stimulating agents have ceased to act, but at last this equalizing reäction ceases; the vital erection continues; it assumes one of the four forms we have indicated, and disease is produced.

Among these excitations, there are some which are agreeable when they do not exceed the normal state; they make us feel our existence more vividly, they give us a high opinion of our vigour, and procure us a sensation of joy and happiness. This causes us to love them, and we seek to promote them, especially such as are exercised on the digestive apparatus, and on the external senses. In this series must be included impressions made by food and drink; by heat when we are in a state of numbness from cold; by cold whenever we are debilitated by an excess of heat; we must also class among them certain impressions pro-

duced by the enjoyments of self-love. There are others which are disagreeable as soon as we perceive them, and against which we reäct by anger; and others which overwhelm us and fill us with grief and despair; these two last species belong to the painful passions. *(See Treatise on Physiology applied to Pathology.)* Finally, others only become sensible to our centre of perception, when they have exceeded the normal condition. Of this character are many phlegmasiæ and sub-inflammations occasioned by cold, without our being conscious of them, as for example, during sleep, and under a variety of other circumstances; such are also the slight irritations to which we are accustomed, or which we are prevented from perceiving by some distraction of mind. Among the unnoticed latent excitations, must also be arranged such as linger in the organs after a state of strongly-marked suffering. We lose sight of them, because our attention is withdrawn by other sensations; these cases are often observed after the termination of acute phlegmasiæ of the principal viscera. A focus of vital erection remains in the organ, which had been inflamed, to which no attention is paid; it is kept up, increases and only attracts notice by again assuming the acute state, or by the disorganization it has produced.

Such are the sources of all the irritative diseases, and if sometimes it has been supposed that a similar affection was developed of itself, and by a kind of fatality peculiar to certain persons, this has arisen from our not having paid sufficient attention to what would appear to be the normal state. It has been asked why perfect health is a chimera? it is because a majority of mankind contract during the course of their lives, one or more of these foci of irritation, which silently act on their principal viscera, and cause them to become disorganized. Formerly, the slight affections which depended on these irritations, were attributed to *a nervous* state. Doubtless, there are individuals in whom a too exalted sensibility renders the functions habitually painful; but these persons are not in a normal condition, their internal senses are super-irritated, and if they are observed with attention, a focus of irritation, which reäcts on the brain, will always be discovered. But this focus itself only exists because

external agents have raised its excitement beyond the limits of the normal condition.

Now, what meaning is to be given to the epithet, *spontaneous*, which is so often applied to diseases? We are of opinion, that this word can never express the production of any affection without appreciable causes, and when we employ it, we only wish to say, that the disease is developed in consequence of vital laws which reäct on irritating agents, and without the concurrence of external violence.

The ideas we have developed on the etiology of diseases of irritation will not at first be relished by the partizans of ontology; but physiological physicians will appreciate them, and whoever will meditate on them and submit them to the test of observation, will soon perceive the progress he will have made in an art of such difficulty as diagnosis.

PROP. LXXVIII.

A partial super-excitation always supposes a too great afflux of fluids; there is consequently a congestion prejudicial to the exercise of the functions in every super-excitation. It is a morbid congestion.

This proposition recals the axiom attributed to Hippocrates: *ubi stimulus, ibi humorum affluxus.* It is time that all the active congestions should be referred to a single and only law, and that we should cease to endeavour to establish vain distinctions between the serous, sanguineous, or lymphatic, &c. fluxions; all these only express the various results of a single phenomenon, —irritation. In fact, can we attribute to nature the intention of at one time forming a fluxion of blood, and at another, of lymph or the other humours? Does a power exist in the economy, a *vis a tergo* which acts on one humour in particular, so as to accumulate it in an organ? Certainly not, and the difference of the fluids which abound in a part is wholly subordinate to the general state, and to that of this part when the stimulation is developed; if it is sanguineous and its vessels are filled with blood

abounding with fibrine, the congestion will be inflammatory; is the body or the irritated part scantily supplied with blood, the congestion will be serous, lymphatic, mucous, or albuminous, according as the tissue of the part is more or less permeable, expansible or dense. It is thus, that inflammatory congestions of the membranes of relation will be mucous; those of the diaphanous membranes, albuminous or serous; those of the synovial capsules, purely albuminous; those of the ligaments, albumino-gelatinous; those of the glands albuminous or lymphatic; those of the bones gelatinous and almost deprived of serosity.

Hence the distinction which physiological physicians have established between the foci of irritation; when this last attracts the blood to, and developes heat in them, it retains the name of inflammation; but if the state of the economy and that of the suffering part are such that an accumulation of non-sanguine fluids takes place in the latter, or at least that the blood is not in sufficient abundance for the congestion to run the course of an ordinary inflammation, it is designated by the name of a sub-inflammation.

It has not been pretended that the blood can never enter the white tissues in a quantity sufficient to develope a phlegmasia in them. We are not ignorant that many of these white tissues, as the ganglions, the cellular tissue, the serous membranes, &c. may be gorged with blood so as to experience a true inflammation; but we are also aware, that in many cases the irritation accumulates a greater proportion of the white fluids in these parts, and it is these two states which are proved to exist by well-marked evidence, that we have wished to distinguish, by applying to one the name of inflammation, and to the other that of sub-inflammation.

It is then irritation which presides over all the fluxions not depending on an obstacle to the course of the fluids. Fluxion is the first result of this phenomenon; congestion means a degree more, or that in which the part surcharged with fluids has lost the aptitude to a regular exercise of the functions assigned to it. We frankly avow that we admit of no other theory, and we think to deviate from it, is to plunge into the arbitrary doctrines of humoralism and ontology; in fact, if irritation be not admitted as the sole cause, we are forced to recognise as many as there are forms of congestions. But, as these causes cannot be demonstrat-

ed, every one will explain them in his own way, and the ancient chaos will reäppear with all the sad consequences it will induce. Hence we shall have the various humours, the vain explanations of their origin, the specifics, a forgetfulness of the true action of stimulants; and we shall be carried back to the epoch of Galen, and the fruits of a close observation of the living and the dead will be lost. However, these motives should not be sufficient to convince an exact and judicious mind, but there is another more peremptory, which is the truth of the axiom of Hippocrates: *ubi stimulus, ibi affluxus.*

PROP. LXXIX.

The union of super-excitation, and of partial morbid congestion, always induces a local, exaggerated, or irregular nutrition, thus constituting active congestion, which necessarily tends to disorganization.

This proposition refers first to the cause of congestions, and positively announces that all that is about to be said respecting congestions will only have a bearing on those which are active. It might have been sufficient to have said, *every active congestion induces a superabundant nutrition and tends to disorganization;* but we have preferred mentioning the cause which presides over it, viz. irritation, in order that we might bring before the reader, the reünion of the two phenomena, *irritation* and *congestion.* This precaution was necessary, for although all irritations produce congestions, these are not always sufficiently violent to produce disorganization promptly, at least at first; of this character are all the purely nervous irritations, and especially pains. There are many which have their sole seat in the tissue of the nerves, and although the fluids may be invited into these organs even by the irritation, this congestion is often slight, and does not tend to produce a prompt disorganization. This fact is undeniable, since we see numbers of persons suffer from nervous pains for many years and afterwards be completely cured. We have therefore at present particular reference to

congestions which are induced by irritation in tissues sufficiently provided with vessels to experience a marked tumefaction. But it is in these congestions, that the kind of process takes place which we have alluded to—a super-abundant and consequently a vicious nutrition.

In fact, the part which swells and which enjoys an exaggerated vitality, begins by appropriating to itself a greater number of molecules than usual; if the volume of its proper tissue does not augment to such a degree as to constitute a hypertrophy, at least the cellular tissue which surrounds and penetrates it appropriates and retains a greater proportion of fluids than it ought, thus constituting a false hypertrophy. It is thus that fat accumulates in the cellular tissue, in the first stage of phlegmon; that gelatine collects in the ligaments of gouty articulations, &c. If the inflammation terminates promptly, these deposits are removed by absorption, and the part resumes its normal conditions; but if the irritation lasts, the proper tissue of the organ, reduced to inactivity by the compression it experiences, wastes away, and sometimes wholly disappears.

In other cases, it is the proper tissue of the organ which becomes the seat of the hypertrophy; as the heart, because it cannot become inactive, whatever may be the pain it experiences. This is not the case with the voluntary muscles; pain renders them immoveable, and the hypertrophy takes place in the tissues only which surround and penetrate them.

It is not always as easy to distinguish to what point the proper tissue of the other viscera is susceptible of hypertrophy in the active congestions which are developed in them; we therefore shall not attempt to decide this question, but we will indicate in a general manner, how the congestions alter the organs. We must first distinguish those which communicate with the exterior, from those which are deprived of this communication: to the first belong all the excretory organs, and they can consequently disgorge themselves in a greater or less degree, which opposes their suffering from hypertrophy. Those which are flat or membranous, as the digestive canal and the bladder, and have large cavities, deposit in these cavities a great part of the fluids which the irritation of their mucous membranes has invited to them and experi-

ence only a slight hypertrophy. Those which are disposed in large fasciculi, like the lungs, liver &c. do not disgorge themselves with such facility; hence they increase more in volume; but an increase of vital action disgorges them in an almost instantaneous manner. This has given rise to the stimulating medication, called aperient, resolvent, incisive, &c. which sometimes succeeds in reducing them; but if the irritation continues, their hypertrophy again occurs, and the same stimulation which at first succeeded in disgorging them, now only serves to favour this hypertrophy.

As to the parenchymatous viscera which are not secretory organs, and which consequently are unprovided with secretory canals communicating with the exterior, as the brain and the spleen, their hypertrophy is more lasting, as it can only be removed by means of venous or lymphatic absorption.

It is evident from these reflexions, that the shades of inflammatory hypertrophy are extremely multiplied and various; and nothing is so difficult as to deduce from them the diagnosis, prognosis, and treatment of the inflammation. In fact, what is most to be dreaded in inflammation, is disorganization; but it is known, that it is always in relation to the intensity and duration of the congestion, therefore disorganization will be most readily induced, *cæteris paribus*, in those tissues which do not communicate with the surface than in any of the others, afterwards come the secretory parenchymata, which are less exposed to it, and the membranous viscera which will resist it the better when they are attacked on their mucous surface, but will be more exposed to it if the inflammatory vital erections correspond to such of their tissues as have no communication with the exterior of the body.

PROP. LXXX.

Active and local super-excitation and morbid congestion are compatible with a general diminution of the forces.

This is certainly one of the most important truths of the phy-

siological doctrine; it has required centuries for us to discover it, and as long as it remained unknown, medicine could not be ranked among the sciences; it could only present uncertainty, confusion, obscurity, and contradictions. It is from having been ignorant of this truth, that Brown has advised stimulants in typhus, in all hectic fevers accompanied with consumption, and in a multitude of slow apyrexic affections, the majority accompanied with what has been termed the cachectic state, and which belong to the chronic phlegmasiæ and the sub-inflammations.

It is this truth that we have the greatest difficulty in impressing upon physicians educated in the principles of the ancient doctrines. They cannot conceive that a focus of irritation is attended with the same characters, from the state of health and strength to exhaustion and marasmus. They always confound the general with the local state, because they have never had a just idea of this latter. In other words, from the debility they remark in the organs of motion, from the diminution of the fluids and solids in most of the organs, they infer that debility, exhaustion, and atrophy of all the organs must necessarily occur; or if they will have it so, they imagine a diminished vitality in all the viscera, as it is in the external parts and in the viscera which are not the seat of disease. Until we shall be enabled to make these physicians comprehend that an internal organ may be super-irritated, super-irritable, in short, too vitalized in the midst of an assemblage of debilitated and extenuated organs, these physicians will not become physiologists. To this truth many others of not less importance necessarily are attached; but as they will be developed in the propositions on therapeutics, we will not now dwell on them.

PROP. LXXXI.

Partial diminution of vitality always induces local diminution of nutrition, although it often produces a morbid congestion, but the latter is passive.

Paralyzed limbs present us with a confirmation of this propo-

sition; we see in them a diminution of the fundamental organs, of the muscles, the active agents of motion, with the vessels which nourish, and the nerves which animate them, whilst the cutaneous tissue becomes engorged with lymph from the deficiency of action in the veins and the debility of the absorbents, which constitutes the passive congestion spoken of in the proposition. But paralyzed limbs are not the only parts that present this kind of atrophy with engorgement; it is equally found around ancient phlegmasiæ and gouty sub-inflammations; it exists at a greater or less distance from old phlegmons, when debility has invaded the muscles and extenuated the vessels. It is often remarked in the vicinity of different foci of visceral phlegmasiæ, beyond the sphere of the inflammation which is disorganizing them. It is thus in chronic pleurisies and pneumonias, that the corresponding intercostal muscles being reduced to inaction, become debilitated, softened, and extenuated, whilst the cellular tissue is infiltrated. The ribs themselves participate in this alteration; they become thinner and more fragile.

It is not uncommon to observe softening and extenuation in the parietes of the stomach, in the vicinity of cancerous ulcers of this viscus, when the inflammation does not keep them in a constant state of turgescence and hypertrophy; but as this inflammation must have previously attacked them, this debility can only be consecutive to the super-irritation. The parenchyma of the lungs becomes engorged with lymph around a focus of chronic pneumonia. But in these cases also, the irritation of the centre of inflammation has extended. In short, in every case where an inflammatory erection remains fixed in a tissue for a long time, the passive state becomes established at a certain distance in the radius of this focus, as soon as the irritation which always preëxists has subsided. Finally, the focus itself deteriorated and decomposed by the inflammation, loses in turn its vitality; then the pus which results from it is partly or entirely removed by excretion or resorption. The inflammation extends itself equally on all sides; it animates and heats the debilitated tissues in the vicinity, and destroys them more rapidly perhaps than if the irritation had not decreased in them. In general, debilitated tissues resist the inflammatory disorganization less than

those which enjoy their normal degree of vitality to the moment when they are attacked; paralyzed limbs are also a proof of this. It is seen that we do not admit of a paralysis in the visceral centre; we recognise there only a diminution of irritability, which may depend on the super-irritation as well as on the want of the excitants proper to each tissue; it may also be remarked, that the sub-inflammatory engorgements do not enter into the class of passive congestions. They will be spoken of in another place.

PROP. LXXXII.

Passive morbid congestion may cause disorganization, but much less than active congestion.

What are passive congestions? those where the blood and other fluids are forced by an obstacle to the circulation, to remain in an organ or apparatus. What must be the result? the dilatation of the sanguine lymphatic or excretory vessels; the extravasation of blood or some other humour. But the dilated vessels may be torn, become inflamed, and such an irritation must end in disorganization; but even if they were only dilated so as not to return to their normal condition, disorganization would still take place. Nevertheless, it must be admitted that this kind of alteration is much less frequent than that produced by primary irritations, in which the phenomenon of inflammation, which in the first case is only secondary, plays the principal part. The paralyzed parts may become infiltrated and atrophied, which also presents another kind of passive disorganization. Sometimes also we see phlegmasiæ which languish and soon pass into gangrene; but this kind of alteration is very rare, and it is on all these cases that we found our assertion in this proposition, that passive morbid congestions may produce disorganization, though much less readily than when they are active. We do not wish it to be understood that we include under this head, lymphatic, glandular, or other tumours. These affections are arranged among the irritations which are primarily active and originate under the influence of stimulants; the organic action which produces them is analogous to a phlegmasia,

and is designated under the term of *sub-inflammation.* We shall speak of it immediately.

When an organ has become engorged, either by an obstacle to the passage of the fluids, which retains them in its tissue, or by the debility which is always induced by inaction, as in the cases heretofore cited, its proper sanguine, lymphatic or excretory vessels, its cells and areolæ may be ruptured, fluids may concrete and others decompose there, and formations of foreign bodies may take place. All these causes united, certainly induce a disorganization; but if the changes which this organ has experienced do not cause an inflammatory or sub-inflammatory action in it, this disorganization never makes a rapid progress. The organ is found converted into a kind of foreign body which may exist for a long time, except it harasses a viscus of the first order, large nerves, or opposes a considerable obstacle to the passage of fluids.

To say that the passive congestions disorganize less than the active, is to say the latter disorganizes; let us see what this disorganization is, and compare it with the preceding. When a morbid vital erection has accumulated the fluids in a tissue, nutrition is at first augmented there, as we have before demonstrated; but this hypertrophy does not terminate in a normal augmentation of the volume of the part, for there is a law which fixes it in an irrevocable manner; and moreover, in supposing that the parts had not yet attained their definitive dimensions, they can only do so gradually, and the rapidity of morbid congestions cannot be subjected to this tardy development. The hypertrophy of tissues affected with morbid vital erections therefore soon becomes abnormal. But this diseased action of the local organic affinities produces different effects which are subordinate to the structure of the parts, to the vitality of the tissue in which the irritation is primarily developed and to the degree and duration of this irritation. Thus, considerable congestion in tissues which are soft and well supplied with sanguine vessels, produces a suppuration known under the name of phlegmon, which rapidly disorganizes when the focus does not communicate with the surface; acts more slowly when this communication exists, but always affording a pus analogous to that of phlegmon. But when the disorganization takes

place by an ulceration, the pus is very different in the different tissues. The excess of the irritation may cause disorganization by the sudden death of the inflamed fasciculi; hence, the gangrene which may be much accelerated by certain stimulants of great activity. A slow congestion in these same tissues amply supplied with sanguine vessels may also end in a suppuration approaching that of phlegmon; these are what are termed cold abscesses. But the irritation may exist, primarily or consecutively to the inflammatory state, in a degree far inferior to this latter; it may be seated in the cells or areolæ of the membranous tissues; in this case it no longer invites an afflux of blood or causes heat and redness; it is no longer inflammatory, it is sub-inflammatory, and the species of hypertrophy it causes proceeds slower than the forms above-mentioned. In tissues which are but slightly sanguine, a violent vital erection may also create an inflammatory congestion; but this soon subsides, and the part becomes engorged with an inert lymph, accumulated in larger or smaller masses, or it contracts a true sub-inflammation. These collections of lymph may undergo different decompositions, often resulting in concretions of various kinds. But what most interests us here, is the mode of disorganization of the sub-inflammatory morbid erections.

If we examine chronic irritation in the membranes of relation, we often see it produce fungous vegetations; the same organic action that engenders these kinds of hypertrophy generally leads them on to suppuration, not to that of phlegmon, but to a softening which covers them with eroding ulcerations. It may then, without begging the question, be assumed that this organic action is of an inflammatory nature, or rather sub-inflammatory. But it appears to us that the white tumours called tubercles, schirri, medullary sarcoma, lardaceous tissues, in short, all those tumefactions, which, after having advanced slowly, often terminate by assuming a jelly-like consistence, sometimes white and caseous, and sometimes sanious and sanguinolent, must be very analogous to the vegetations of the mucous membranes and the skin. Like them they are seen to increase under the influence of external causes of stimulation, whether they appear in the tissue primarily irritated, or are developed in those which have been secon-

darily affected by sympathy; like the fungous excrescences, they present great differences in their consistence, the progress of their development, and the quantity of sanguine capillaries which penetrate them; there are the same relations in the termination of these two kinds of morbid productions; for if there are fungous growths that remain stationary during the course of a long life, whilst others ulcerate with an astonishing rapidity, there are also lymphatic and adipose tumours whose progress is checked, or is so slow that they appear insensible, whilst others increase and are resolved into putridity in a tolerably short space of time. But if these two orders of morbid alterations resemble each other, as respects the cause that induces them—stimulation, they are equally analogous as regards the cause which hastens their softening, since this is also stimulation. Do we not know that the more certain fungosities are irritated, the sooner they ulcerate, and is it not on this account that they have been termed *noli me tangere?* Have we not also observed that by irritating external white tumours with the intention of dispersing them, that their progress is accelerated, and their adhesion to the skin promoted with the formation of eroding ulcers on this latter? But observe these ulcers, how do they progress? Why are they eroding? Is it not from the effects of a phlegmasia which gradually extends around the ulcerated centre? There are no tissues in which these kinds of morbid hypertrophies are not possible, because there are none which do not contain lymphatics either alone, or combined with other vessels and with some nerves under the form of ganglions, or adipose cells, or membranous tissues, or mucous and sebaceous follicles, or finally clusters of excretory vessels.

To these sub-inflammatory morbid erections, let there be added those which depend on unequivocal and sanguine inflammation, the alterations that we have noticed as resulting from the passive state, the concretions that may take place in the different ducts whether sanguineous or excretory, and in the interstices, at the expense of the fluids which traverse them, or which are deposited in them, and we shall have a summary idea of the causes of the degeneration of all the living tissues.

A question here arises which should not be overlooked. Are these disorganizations wholly subordinate to a vice of nutrition,

independent of the excess or deficiency of vitality? We know that many physicians attribute to such a cause, tubercles, medullary sarcoma, melanosis, and lardaceous and scirrhous tissues.

To reply to this question, those cases must be borne in mind, where it is evident that these tissues are developed under the influence of an irritating cause. Now, these cases are very numerous; sanguine inflammation, contusions, frictions, the application of irritating bodies, and sudden metastases of the irritation from one organ to another, daily produce these kinds of tissues.

To say that they would be developed without the irritation which preceded them, is to advance an unfounded hypothesis; for the negative cannot be proved. Moreover, when I observe that individuals of the same constitutions who die with tubercles in cold countries, are exempt from them in warm climates, I am obliged to admit that cold is the cause of them; but how does it produce them? Is it not by diminishing the vital action at the circumference to augment it in the interior of our organs? It is then by irritating these latter. In the like manner, when a cancer occurs in a contused, excoriated, lacerated part, or one harassed by stimulation, why maintain that it depends less upon these causes than the inflammation and pain which have preceded it? Is it because it has been seen to arise in tissues which have neither been contused nor inflamed? It is impossible to prove that they may not have been at least irritated: 1st, because the irritating impulsions are not appreciable; in fact, inflammation itself is often developed, without the irritation which produced it having been perceived; do we therefore conclude the less that it depends on this cause, in cases where its action is evident? 2d, because irritation, once established in a tissue may traverse the economy and become seated in others, where it acts according to the organization and the peculiar mode of vitality of the part.

To maintain that these tissues are not formed except the part is predisposed to it, or contained the germ of them, is to raise an objection which is equally applicable to inflammation, pain, &c.; it is plainly to say that organization is a necessary condition of every kind of alteration of the tissue, and is therefore to advance a triviality that is not deserving of an answer.

But, it is said, inflammation always follows violent irritations, and sub-inflammation is not always the consequence of them; therefore it requires a particular predisposition for this latter. We grant it; but it does not result from this, that irritation has nothing to do with it, as nothing can destroy the facts which prove that sub-inflammations succeed to irritation; since nothing can demonstrate that they would have arisen if this latter had not existed. All that can be decided on this question is, that the living organization is less liable to inflammation than to sub-inflammation. It now remains to determine what are the conditions under the influence of which sub-inflammation is most readily produced; this will be discussed when treating of the propositions relating to this species of morbid affection.

PROP. LXXXIII.

Active morbid congestion being always the companion of super-excitation or super-irritation, it suffices to name this last to be understood in developing the progress of diseases: we may even, to be more brief, content ourselves with the word irritation, provided the same signification is attached to it as to these two preceding expressions; but the epithet morbid must always be understood.

This proposition, purely explanatory of the language of the author, requires no commentary.

PROP. LXXXIV.

Irritation may exist in one system without any other participating in it; but this occurs only when the irritation is slight. Its effects are then limited to the local organic actions and nutrition of the part; but as soon as the local irritation is increased to a certain degree, it is repeated in other systems and other apparatuses more or less remote, but always without changing its nature.

This proposition is one of the keys to physiological pathology; it exhibits the secret tie which unites the slightest diseases with the most severe; it fills an immense hiatus, which has existed in the science from the most remote antiquity; it destroys this insulation of the different shades of irritation, which may be regarded as the source of medical ontology; it connects chronic and acute affections, those of different ages, sexes, and places, with one another; it shows the union of surgery with medicine; it reduces to their just value all the distinctions established by the nosologists, and shows how vicious the comparison is, which they have made between diseases and plants, *symptomata se habent ad morbos ut folia et fulcra ad plantas*, (Sauvage.) In fact, observe an external and visible inflammatory irritation, abandoned to itself from its origin to its highest degree of development; watch it afterwards under the influence of modifiers of opposite effects; compare it in different sexes, and in the most different climates, and proof of all that I have just said will be found. It is not so easy to verify this in relation to the morbid vital erections of internal organs; but those accustomed to observe what occurs on the exterior of the body, are soon able to apply their observations to the deepest seated viscera, and to the slightest grades of their irritations; they will even find a great pleasure in this study, for every day will remove some doubts, will elucidate some difficulty, and will exhibit some unexpected connexions. Thus conviction is attained: for it is impossible even for the most acute minds to perceive, at a single glance, all the consequences of a principle, which is itself but a conclusion resulting from the comparison of an immense number of facts.

PROP. LXXXV.

The nerves are the sole agents in the transmission of irritation; this constitutes morbid sympathies. Morbid sympathies are effected then in the same manner as healthy sympathies; they differ only in this, that in the latter the nerves transmit more irritation, or a mode of excitation, which is repugnant to the laws of life.

When a person suffers from a phlegmon, and in consequence of this pain, experiences uneasiness, pain in the head, in the body, and in the limbs; when his pulse becomes accelerated, the temperature of his skin increased, hunger replaced by thirst, and the tongue red and covered with mucus—there is no physiological physician who will not now agree that the pain of the focus of phlegmasia is the cause of all these derangements, and that consequently the nerves are the agents which have transmitted the excitement to the other organs. But when a phlegmasia is very circumscribed and not very painful, the feeble irritation which results from it, does not produce any sensation in remote organs, and nevertheless it is sometimes observed to derange some of the functions. Are the nerves here also the agents for the transmission of the irritation? to answer this question it is necessary to examine the following proposition.

PROP. LXXXVI.

Morbid sympathies are of two kinds: the first are manifested by organic phenomena, viz. increased action in the fibres, congestions, alterations of the secretions, exhalations, and absorption, which are then augmented, diminished, or vitiated by changes in the temperature, and by vices of nutrition; these are the organic sympathies: the second are manifested by pains, convulsions of the voluntary muscles, and by mental aberrations; these are the sympathies of relation.

We have just given an example of the sympathies of relation, and we have ascertained that the nerves are the agents of these sympathies; but are they also the agents of the derangements of the capillary circulation, of the secretions and exhalations which constitute the organic sympathies?

The nerves are not solely destined to give pleasure and pain, in order to determine the external acts of animals; they must, as is known, connect the organs and collection of organs, (appa-

ratuses,) for the performance of functions which constitute part of internal life. The connexions of the great sympathetic with the nerves of relation, explain the association of the respiratory muscles with the thoracic and abdominal viscera;—there is here no intervention of the will, but the brain and spinal marrow concur in it, because the irritation of the viscera is transmitted to them, and compels them to cause contraction or relaxation of those muscles which should contract or relax in concert with the viscera; the most prominent of its associations are the cough, sneezing, laughing, sobbing, vomiting, colics, and tenesmus, parturition, the permanent contraction of the abdominal muscles when the intestines are constricted, and their relaxation in the opposite case. In these different sympathetic acts, which appertain to pathology, and which are susceptible of a multitude of modifications, nothing is seen but the exaggeration of the normal state, and the nerves here play the same part as in that state. These then are also sympathies of relation.

When, in consequence of a necessity to vomit, or to yield to a colic, &c. a person is seen to assume certain attitudes, to cry out, to sigh, &c. it is evident that the irritation of the suffering viscera has required of the cerebral seat of the will, the movements of the voluntary muscles. The nerves have then, here again, been the agents of these sympathies, since they alone could transmit to the brain pains, whatever may be the cause which has produced them. Here then is again an example of the sympathies of relation.

But when in consequence of an irritation of the alimentary canal, the skin assumes a definite colour, and becomes heated and dry, the tongue red or coated with mucus, the conjunctiva injected, the urine deep-coloured or clear, when a flow of saliva is caused by inflammation of the gums, &c. must the intervention of the nervous system again be admitted to explain these sympathies which we have called organic? We will answer affirmatively, because it seems to us impossible for a single irritation to exist without its being received by some portion of the nervous system. It is useless to object that the sympathies exist in zoophytes and plants which have no nerves; these sympathies take place only because the stimulation is transmitted through the

living fibres. But how is it to be imagined that in us and in similarly organized animals, it can be transmitted through the tissues without implicating the nerves which exist in them? But if it does implicate them, these nerves will certainly be more affected than the other tissues, and will transmit the irritation more readily to the other organs. If men were not fond of paradoxes, of the marvellous and incomprehensible, it would not be maintained at the present day, that nerves have nothing to do with the sympathies. That these can take place in polypi, may be conceived, in admitting that the substance of these animals is entirely gelatinous, and that the whole is equally moveable, and equally submits itself to a stimulating commotion; but does the same take place in more complicated animals? Have they not some tissues hard and inflexible, others with little mobility, isolated, and consequently incapable of propagating stimulation? Unless reason be entirely cast aside, this must be admitted: those tissues only which possess mobility, are general and exist in all the organs, and every where communicate with themselves and others, can propagate stimulations. In man, which are these tissues? They are the nervous, vascular, and cellular; but of these three tissues which is the one which is most completely connected with itself and with others? is it not the nervous? Which is that, which in all evident cases, experience proves to us to be the organ of transmission of irritations? is it not again the nervous? Why then should we deny it this function in those cases which appear obscure? It would be singular if irritations which are transmitted with least facility, were propagated by any other tissue than that which nature has so constructed as to render it best fitted to transmit every kind of stimulation; that the only one of all the tissues which terminate in the cerebro-rachidian centres, and which is known to be destined to reflect irritations should not be most apt to propagate these irritations from one organ to another! This is what every man with a moderate share of reason, is naturally led to remark, and we cannot conceive what sophistry can oppose to such plain inductions.

But we possess still more valuable data for the solution of this problem. Have we not distinguished in our *physiology* the

different forms of nervous matter? It consists in fact of the central nervous matter, the nervous matter of the sensitive expansions, and the nervous matter enclosed in the conducting tissues. But what can limit the nervous matter of the expansions? We clearly distinguish it only in the senses and in the membranes of relation; but can we doubt that it exists, in other forms, in the muscles in which so many nerves ramify, in all the secretory and non-secretory parenchymata, in the fibrous, serous, and cellular tissues, and even in the bones in which sensibility may be developed? Many nervous chords are certainly not met with in them, but are many required to transmit irritation? Nervous matter is almost inert in these tissues, so long as they continue in a normal condition: numerous agents of transmission would then be useless in them; but irritation developes and renders this matter active. These agents then fulfil their function, and the pain is in proportion to the quantity of nervous matter existing in the affected part, and softened by the inflammation. I ask now, if the existence of nervous matter is probable in tissues in which so few nervous chords are observable, why may it not be so in zoophytes? But few nervous chords are to be seen in the mollusca, and certainly they do not constitute the whole of the nervous matter of these animals. These chords are in relation with other nervous matter found mixed with the gelatino-albuminous substance in which no nerve is distinguished; otherwise how can we conceive the utility of a single white chord connected with the principal vessel? Now if we admit the existence of nervous matter in the mollusca, we do not see why its presence should be denied in polypi and other animals deprived of blood-vessels. The question does not appear to us determined in favour of our adversaries; there may exist in these animals a portion of tissue destined to transmit irritations.

The existence of sympathies in consequence of similarity of tissue is admitted; they certainly exist; but is this to say that they are independent of the nervous system? When irritation is transmitted from one mucous membrane to another, or from one serous membrane to another, from one ganglion of the absorbent apparatus to another, from one part of the skin to another, or from one part of the fibrous system to others more or less distant,

what proof is there that the nerves have nothing to do with this kind of propagation? The first irritation is felt by the nervous extremities in the affected tissues; it must be diffused through the organism. Is it then astonishing that its effects should be experienced in the tissues analogous to those in which it originates, rather than in any of the others? We say *rather*, because it is also experienced in the other tissues. When it is intense all the irritable organs are affected by it. If gastritis causes redness of the tongue and conjunctiva, it also produces injection of the liver, deranges the action of the kidneys, and renders the limbs painful. It is the same with arthritis, for if the irritation is transmitted to another joint, it is also transmitted to the viscera, and produces fever and derangement of the principal secretory organs. It is solely in chronic and slight irritations that the sympathies appear to affect more the tissues analogous to those primarily affected than any of the other; such as herpes, sub-inflammations of the cellular tissue and ganglions, chronic arthritis, periostitis, &c. But when these irritations become aggravated, they are propagated, like the preceding, to all the irritable tissues, and awaken at the same time the organic sympathies and those of relation.

We have been told of the sympathies of vegetables; but what does that prove, except that there exists in them a tissue which transmits irritations and performs the office of the nervous system of the higher classes of animals? Some botanists have termed this tissue nervous, but that epithet has been denied to it, because it has no central organ; but what is that to do with animals which are endowed with this centre? Because stimulating transmissions take place in organized beings which have no brain, does it follow that in those which are endowed with one, these transmissions may occur without the system of transmission which communicates with the brain taking part in it? It is easily intelligible why this system does not transmit irritations to the brain when they are slight, since that does not appear necessary for the performance of limited actions; but it is absolutely necessary that the communication with the brain should be always open, in order that its influence may intervene for the execution of actions which require movements of some extent. If some living beings have no brain, it is because all their spon-

taneous movements are very limited, or may be performed without any combination of simultaneous efforts; if others possess one, it is because one is necessary for the purpose of establishing relations between tissues having different functions and organization, which do not exist in the former class, and to execute combined actions of greater extent. When they have this centre it must perform its office when necessary, and the tissues which in animals with a nervous centre, perform the functions which other tissues execute in plants, can no longer act with any energy, independently of this centre, for the simple reason, that there is no part of their tissues which is not in direct communication with the nervous centre.

We believe, therefore, that the organic sympathies, like those of relation, are performed by the nervous apparatus; but as we shall assume organization as the basis of our theories, we think that the organic sympathies which take place between the surfaces of relation and the secretory organs annexed to their functions, between the same surfaces and the muscular layers united to them, &c. may take place by means of the great sympathetic alone; but whenever it is necessary that the sympathetic actions of the muscular layers of the hollow viscera, as the alimentary canal, the bladder and uterus, should be of some extent, the cerebro-rachidian centres must then participate in them, in order to call into play the cephalo-splanchnic muscles which must act in concert with the muscles of the viscera: that is, sympathy of relation must be added to the organic sympathy. Thus the action of the secretories, although at first excited by the organic sympathies, (the stimulation of the surfaces of relation,) soon develope sympathies of relation in order to effect the elimination of the excreted humour just deposited on this surface. Do we not know that efforts to vomit—those to expel the feces, rendered necessary by a super-abundant secretion of bile; those for the discharge of urine demanded by the action of a diuretic; those for expectoration which are required by the sympathetic influence of a stimulant taken into the stomach; those for the ejaculation of semen, demanded by the presence of this fluid in the urethra; those for salivation, indispensable to spit out or swallow saliva, the secretion of which is excited by a sialogogue: do we not know we re-

peat, that all these actions could not be performed without the concurrence of many muscles, the actions of which could not be effected without the cerebro-spinal influence, that is, without the sympathies of relation, which are necessarily joined to the antecedent organic sympathies.

The stimulation of the heart in the phlegmasiæ of other organs, appears to us also to take place through the intervention of the brain and spinal marrow, even when the focus of inflammation does not excite distinct pains, because this stimulation is always accompanied with that of the nerves of relation, which certainly would not be affected if the brain itself were not so. We are equally far from believing that the brain has nothing to do with the redness of the skin and of the openings of the mucous membranes, and the derangements of their secretions caused by visceral phlegmasia, for the muscles associated with these mucous membranes, and which contract under the influence of the brain, are always simultaneously affected. Do we not know that whenever the tongue appears of a fiery redness, that it is contracted, pointed, sometimes trembling, and that it becomes relaxed and expanded on becoming pale, when the internal irritation ceases? Is it not the same with the eyes, whose proper muscles, as well as those of the palpebræ, become rigid, convulsive, incapable of motion, or affected with tremors, by the same influence which reddens the conjunctiva, and denaturalizes the action of the secretory vessels of the organs? We may even extend this remark to the voluntary muscles. Whenever the skin assumes a particular red colour in visceral phlegmasiæ, the subjacent muscles are more or less stimulated, as the rigidity observed on feeling them prove, and they are even affected with spasmodic twitches, which are called subsultus tendinum.

To sum up what we have written in this commentary, we will say:—1st. Very slight and very circumscribed irritations affect sympathetically only the tissues in their immediate vicinity; the intervention of the nerves is always necessary in these sympathies, but that of the brain and its dependencies is not constantly so, at least in a sensible manner. 2d. Irritations sufficiently intense to derange the harmony of the functions, are always trans-

mitted by means of the nervous chords, and by the reäction of the brain and its dependencies.

PROP. LXXXVII.

The organic sympathies may exist without the sympathies of relation; but the latter always involve the former: most frequently however these two kinds of sympathies occur simultaneously.

This proposition requires no commentary; it presents, in other words, the summary of the preceding commentary.

PROP. LXXXVIII.

The greater the sensibility of the irritated organ, and that of the individual, the more multiplied are the sympathies, and *vice versa*.

This is one of the most important secrets of physiological medicine; in fact, from the differences of men in regard to their sensibility, result in the symptoms of the same affection, differences which often tend to render it misunderstood, and in this way to multiply diseases. To understand this assertion, it is sufficient to recollect that sensibility is only one of the results of the performance of contractility; but excessive contractility being excited in an exaggerated manner by the vital inflammatory erection, the stimulation resulting from it reaches the brain, and according as it is perceived more or less distinctly, or rather reflected to the different organs, it more or less violently deranges them; the symptoms, that is, the indications of the primary irritation become more or less numerous and more or less easy to distinguish. It frequently happens that the primitive focus of irritation is less painful than another focus of the second order, developed by the reäction of the brain; then physicians fixing their attention upon this focus lose sight of the

first and misunderstand the disease, at other times deceived by the number of suffering points, they go so far as to refuse to the affection a determined seat in the organism, and regard it as general, *morbus totius substantiæ.* These errors have been too long committed in relation to acute phlegmasiæ, and it is this which has gained for them the name of *essential fevers.* But as we have treated of this point in a general manner in developing proposition LXXII, we will not recur to it here, but must necessarily defer the details until we come to the propositions relating to each phlegmasia in particular. The same fault has been committed in regard to chronic affections. We have in the old nosological charts, general neuroses, cachexies, consumptions, &c. which are nothing else but states of suffering or decay of which the original seat has been concealed by the absence or multiplicity of the sympathies, that is, by the constitutional differences of the sensibility. When an irritation is seated at the exterior of the body, our senses suffice us to form a diagnosis of it; but when its seat is interior, this must be determined by induction, and it is by the sympathies principally that we are enabled to form our judgment. It is then the observation of these phenomena which should first fix the attention of the young physician; it constitutes the preliminary study to pathology; and the principal object of a clinical professor should always be to accustom his pupil to refer every pain and every unusual action to the organ whose irritation it reveals.

PROP. LXXXIX.

The more numerous and active are the sympathies, the more violent is the disease.

The reason of this is very plain, it is because irritation excites irritation, and that the excess of pain and action must in a short time produce the exhaustion of the forces and extinction of life. The diseases of very sensitive persons, will then, all other things being equal, be more dangerous than those of more obtuse sensibility.

PROP. XC.

Excess of the sympathies of relation suffices to produce death, which in that case appears to depend upon disorganization of the centre of relation. Excess of the organic sympathies may also occasion a rapid death, by congestion and disorganization of several viscera.

The sympathies of relation consist, as we have seen, of disagreeable sensations which are referrible to pain; convulsive actions of the muscles of the body, which suppose analogous ones in the viscera, and finally convulsions of the muscles, which, in the normal state, are obedient only to the will. These different phenomena, in which we perceive a grand general phenomenon, the transmission of combined irritation cannot take place without a very strong vital erection of the brain. But the danger depends upon the excess of this erection. Before inquiring what must be the alteration of the central nervous substance, we will remark that no modification of the organism is more promptly fatal than the excessive action of the brain. The too acute perception of pleasure or pain may prove fatal in a few seconds: there is no other cause of death of equal activity to this, except the poisons, and even of these there are but few which act with equal promptness. Convulsions come next, but they may not cause death for several days. Whenever an acute phlegmasia is accompanied with violent convulsions, it is much to be dreaded, for we know that death may occur suddenly. As to chronic affections, no one is ignorant that those which are accompanied with convulsive phenomena exhaust the forces and hasten marasmus. Let us now inquire what are the alterations in the nervous substance in these two kinds of death. If too acute perception is the most dangerous of the nervous modifications, it seems to us that it depends upon a too sudden and violent afflux of blood to the brain; if convulsions are less dangerous, it is in our opinion because the sanguineous congestion of the brain is slighter, and because death depends less upon this congestion than

upon the excess of innervation, that is, on the excessive expenditure of the forces. In the first case, the whole action is concentrated in the brain; in the second it predominates simultaneously in the cerebral pulp and the nervous expansions.

When we attribute the dangers of these two kinds of nervous modification to the sympathies, we signalize the cases in which the brain and its dependencies receive the irritation of a focus of phlegmasia situated in some other part; we would say, the case in which the cerebral affection is secondary. It must then be admitted as a principle, that every irritation of the organs which awakens very many sympathies of relation, implicates the chords and nervous expansions in the different parts of the body, only because it is vividly felt by the brain and forcibly reflected by it through the different branches of the nervous system. It is thus that the affections of the different organs are linked together, and now we are prepared to follow the displacements of irritation, of which we shall speak in treating of metastases.

It is further stated in the proposition, that the excess of the organic sympathies becomes speedily fatal by the disorganization of the viscera. This manifestly refers to violent congestions of the secretory organs and every kind of parenchymatous tissue, the brain excepted, when there is inflammation of a viscus of the first order. We have already seen, that similar modifications could not occur without a mixture of the sympathies of relation, whilst there is no point of local irritation of any intensity which is not propagated to the brain; but the danger here results less from the excess of the cerebral congestion or super-innervation, than to the congestion of the other viscera; the death of the brain is evidently prepared by the disorganization of the lungs, heart, liver, and organs of digestion. But death from causes of this description is always announced by the violence of the fever, that is, the rapidity of the circulation and excess of calorification, from the increased action or torpor of the secretory organs, from the extreme difficulty of the acceleration of the blood and of nutrition, that is, by the excess of the sympathies which we have called organic.

This explanation which we have just given of the sympathies was indispensable, in order to render them intelligible, and to

materialize them as far as possible, by referring them to organs. We will terminate by a final summary, which will facilitate the understanding of all that has just been said respecting this important subject.

1st. Limited morbid erections unattended with pain: organic sympathies solely, the brain taking no part in them. 2d. Extensive and painful morbid erections: two kinds of sympathies, organic and cerebral. 3d. In all the extensive morbid erections; *(a)* danger on account of the intensity of the sympathies of relation, which gives the measure of the imminence of the cerebral disorganization, and of the deperdition of the nervous forces: *(b)* danger on account of the intensity of the organic sympathies, which gives the measure of the violence of the congestion of the other viscera, from the imminence of their disorganization.

PROP. XCI.

The organ primarily irritated is sometimes the only one to suffer congestion or disorganization; the organs sympathetically affected not experiencing sufficient irritation to partake in the congestion or disorganization.

Examples of this are furnished by the cases in which death is caused by rapid pneumonia, by pulmonary apoplexy, by cholera morbus in the course of a few hours, by a violent cerebral apoplexy, &c.; it is to be remarked, however, that these deaths are less common than those where many viscera are simultaneously affected with congestion, and also that a very considerable congestion cannot occur in any organ without at the same time being prejudicial to the brain.

Irritation may exist in an infinity of grades. Those of the highest degree have a double character on which all the danger depends; the excessively precipitous afflux of fluids, the excessively rapid expenditure of the forces from the irritation of the brain and nerves. We use the word *excessively*, because every sudden change in the organism is intolerable, and because in irritation as in congestion, excess exists from the moment in which

the intensity of these two phenomena incapacitate the organ in which they are seated from concurring in the maintenance of life. We employ the word *rapid*, because the change of an organ, whatever may be its importance, cannot produce prompt death if this change does not very speedily take place. In fact, it is constantly observed, that the viscera of the first order may in time undergo very considerable changes and disorganizations without life being interrupted; it becomes, it is true, feeble, but it does not cease until complete marasmus has taken place, and it is this which distinguishes chronic affections from acute. But if an acute affection supervenes on a chronic, this occurrence may cause the destruction of the individual before marasmus occurs; but this circumstance cannot weaken our assertion. One of the most important points for the practitioner is then to accustom himself to appreciate the seat and degree of the abnormal irritation. When several organs of the first importance are simultaneously irritated, and this occurs suddenly, the danger is always urgent, the disease is very difficult to subdue; but it is much less common for irritation of a single viscus to present the same danger, and it is precisely this difference that the author desired to indicate in the present proposition.

PROP. XCII.

The organs sympathetically irritated, may contract a degree of irritation greater than that of the organ from which they derive their irritation. In these cases the disease changes its seat and name: these are metastases.

It is time to understand the term metastasis. For a long period it signified the displacement of a supposed morbific matter; subsequently it was used to express the change of the disease. But what is the disease? It is the irritation, in cases in which metastases can occur. Metastases are then nothing else but a new point of irritation, which replaces that which has preceded it. When irritation is developed in an organ, the nervous system, by the intervention of its centre, transmits it to the other organs, and

diffuses it in different degrees through the organism. Then the tissue, which is the most apt to suffer from it, takes possession of it and becomes the new seat of the disease. This is metastasis. It remains for us to examine the peculiarities it presents, and the following propositions will enable us to develope it.

PROP. XCIII.

The organ which has become the seat of a metastasis, excites then, sympathies which are proper to itself; and these last in their turn may become predominant: such are the erratic phlegmasiæ, &c.

This explanation completely elucidates the obscurity that existed in relation to the pathology of the changes which diseases undergo during their course. It is one of those which has given the rudest shock to ontology. How could physicians formerly understand a community between gastritis, hæmorrhoids, gout, calculus, and apoplexy? Those who believed in the existence of a morbific humour in gout, might also suppose that it was transported to the kidneys and bladder; for some analogy exists between articular concretions and gravel, or calculus. But physicians could not explain the part which the gouty humour played in the production of an effusion of blood in the brain; nor was it less impossible for them to explain how the cessation of an habitual hæmorrhage could engender calculi, how an herpetic eruption became converted into an hæmoptysis, how mania changed into gout, or to give a satisfactory reason to those who inquired of them how asthma, a disease which they regarded as nervous, could disappear on the appearance of a lymphatic engorgement. The impossibility of explaining all these changes in a somewhat satisfactory manner, and capable of uniting all intelligent persons, had opened the career to hypotheses. Every physician, dissatisfied with the explanations offered to him, believed himself authorized to propose another: he was not stopped by the faults which could be discovered in it: why should he fear to hazard unproved assertions, when the masters of the art had not blushed

to put forth such ridiculous ones? What the innovator might fear, was not to be able to make every one a convert; but he knew that the most absurd opinions had found and still preserved some partizans. Why then should he not flatter himself with acquiring them in his turn? It is thus that the young physician, after having respectfully bowed before the high conceptions of his predecessors, ceased to admire them in attempting thoroughly to investigate them. Afterwards taking courage, he finished by becoming himself the creator of an hypothesis. Thus arose that multitude of hypotheses respecting the cause of the conversion of diseases, which physicians could no longer, like Galen, refer to the four elements; and the new chemical theories, whose fall has been still more prompt than that of the ancient.

But in attributing metastases, epiginomena, and deuteropathic affections to the change of seat of the irritation, the physiological doctrine relates only a fact, which every one may verify, and which consequently should unite all intelligent persons. Although every intense excitation is diffused through the organism, each organ and each apparatus has its particular sympathetic influences; and thus to speak, its predilections: it is on this account that the group of symptoms changes its aspect as soon as the principal irritation becomes located in a new organ. It is thus, that in the displacements we have indicated, the sympathies belonging to irritations of the articulations, those which depend on pains of the margin of the anus, those which excite pain of the kidneys, those which are the necessary sequel of a cerebral congestion, &c. are seen successively to become developed, and that the irritation will produce in the skin an herpetic eruption, or an erysipelas; in the anus a boil or a hæmorrhage; in the kidneys gravel; in the articulations albuminous congestions, and concretions, &c. &c. Shall we cite articular irritations in particular? We will find that one of the articulations becomes phlogosed by the influence of cold, acts sympathetically on a second, renders it at first indistinctly painful, and the next day the inflammation is transferred to the latter. Shall we investigate the local effects of this inflammation? We will find that in a dry and superficial articulation, it will produce calcareous concretions, whilst transferred to another joint, deeper seated, more

abundantly supplied with blood and serous secretion, it will cause a phlegmonous suppuration. There is no proposition more fertile in theoretical and practical results than this. We shall directly follow up its development.

PROP. XCIV.

If the sympathetic irritations, which the principal viscera determine in the organs of secretion, exhalation, and on the surface of the body, become more violent than those in the viscera themselves, these last are relieved from their irritations, and the disease terminates by a prompt cure. These are the crises. In these cases the irritation proceeds from the interior to the exterior.

PROP. XCV.

Critical congestions terminate always by an evacuation, either secretory, purulent, or hæmorrhagic: without one of these the crisis is not complete.

Who can doubt that the secretions and exhalations that take place on the surfaces of relation, (the skin and mucous membranes,) may not be accelerated, retarded or altered by an irritation of the principal viscera? When this irritation is very energetic, either the secretories do not act sufficiently and the evacuations cease; or they act too much, and then the fluids which they produce are depraved and become irritants to the surfaces with which they are in contact. This is the case with the bile and other humours of the digestive canal in gastro-enteritis and colitis, the nasal mucus in coryza, &c.; such is also the sweat, which although it does not irritate the skin by its contact, is viscous and of a strong odour in pneumonias which have not begun to abate, and fetid in active gastro-enterites. But from the moment that the visceral phlegmasia begins to diminish, and is going on to resolution, we find that these same products of secretion or of exhalation be-

come abundant, easy, healthy, being neither too albuminous or too gelatinous; the concretions that may have been formed are removed and detached by this normal secretion, and the surfaces with which it comes in contact no longer suffer from it.

It is this return of the secretions to the normal state with augmentation of their quantity, which was formerly the subject of constant observation and the object of all the wishes of the great Hippocrates. It is also the duty of the physiological physician, to attentively observe the evacuations that he may be enabled to determine the degree of the irritation. But he desires to go further; he wishes to learn whether the secretory crises are the cause or the effect of the diminution of the visceral irritation. The solution of this results from preceding considerations: if the secretions have been deranged by the sympathetic influence of the diseased viscus, affected with inflammation, they presented shades of alteration which correspond to that of the disease, and they are re-established when the organ ceases to suffer. We are therefore led to conclude that the secretory crises are the effect of the diminution of the irritation and of the visceral congestions. But there are two collateral proofs of this; in producing a cessation of this irritation, in removing the internal congestions which it has produced, the appearance of the crises in question is hastened, whilst it is but rarely that a removal of the visceral affection can be induced by stimulating the depurative organs. This difficulty, doubtless depends on the fact, that to excite action in a secretory, we are obliged to act on the very organ whose action had been suspended by the irritation. The urine and bile have ceased to flow because the internal membrane of the digestive canal is super-irritated; I wish to again produce these excretions, and I add to the excitation of this membrane;—I must therefore augment the cause of the suppression which I am pretending to cure, I have therefore taken a very erroneous plan. To succeed I require a stimulant, which is able to act immediately on the secretories. The ancients flattered themselves that they possessed such remedies; they imagined that purgatives and diuretics being absorbed, acted directly on the liver or kidneys, or rather they were ignorant of the relations discovered by Bichat between the secretories and the surfaces where their products were deposited.

They viewed the phenomenon at large, without being able to explain it. Nature terminates fevers by secretions, say they, therefore we ought to excite the secretions to terminate these diseases. But the preceding explanations prove that their reasoning was not correct, and we learn why the trials of these practitioners were so often unavailing.

So often, say we—they were not then always so? Certainly not, and this fact, not less important than the preceding, is sufficient to prolong the error of physicians and to permit us even now, to observe a system of medicine solely founded on the employment of means which act on the secretories. We mean the theory of contra-stimulants; the slight, but at the same time real success which enables it to maintain its position among us, is merely supported on those cases where the stimulation of a phlogosed surface is not fatal to the individual who has been subjected to it. But let us continue our observations on the sympathies, and we shall soon find a solution of this new problem. We have seen that irritation of internal surfaces of relation does not always produce a cessation of the secretory evacuations, and even that it often augments them. It therefore results that medicaments which cause a degree of irritation on the surface in question corresponding to that of the super-secretion of the organs annexed to it, will necessarily produce the same result. This in fact is demonstrated by observation; but is this forced super-secretion a crisis that can be compared with that produced by the diminution of the visceral irritation? Here is the very point of difficulty, and to judge of it properly, recourse must be had to facts. Now, facts prove in the most incontestible manner, that in the great majority of cases, by thus offering violence to the different secretories, the phlegmasia which had suspended their action is augmented; the patient is needlessly debilitated; the secretories return to their former inaction, and the patients fall victims to the progress of the primary irritation, as well as to the development of various other points of phlegmasia. Do not these facts seem to demonstrate, that the secretory crises cannot be considered as the power which determines a solution of the internal irritations; that on the contrary the former are only the sequel and consequence of the diminution of the latter; and hence, that the former

become the outward sign of the latter only when they are not the result of a super-irritating treatment?

But there are, we say, some cases in which patients subjected to artificial secretory stimulations may recover; let us examine what then takes place in the economy. These considerations will not lead us from our subject; they will rather aid us in the investigation that we wish to make respecting the phenomena that have a relation to crises.

It is a law of the economy, for the maintenance of the living state, that every violent stimulation should terminate, after a variable period of time, by convulsive motions, or by evacuations; that is, by convulsive motions, if the stimulation is confined to the nervous system and brain; by evacuations, if the stimulation acts at the same time on the heart and on the circulatory function. In fact, there are two general modes of stimulation; one which causes convulsions, and is the most readily produced, the other which developes fever, and is often a sequel to the other. Convulsions and fever are the only two modes of reäction of the animal organism against perturbating agents; if either is wanting, the stimulation remains concentrated in the visceral nervous apparatus, that is, in the brain and splanchnic nerves; and if life is not suddenly extinguished, more or less severe chronic affections are the necessary result. Moreover, convulsions and evacuations are not always sufficient to completely remove the local irritation that occasioned them. We shall not be found deficient in facts to corroborate these assertions, as we proceed in our investigations. But let us first examine those which bear upon our subject. What becomes of the stimulation exerted on the digestive organs by large doses of tartar emetic, purgatives, sudorifics, diuretics, &c.? What becomes of it? it produces convulsions, or super-secretions, or hæmorrhages, or internal inflammations. If it does not give rise to one or more of these results, it must necessarily augment the internal inflammation which it was intended to combat, extend it, propagate it to other viscera either in an acute or in a chronic form; finally, if it is very violent, it may destroy life in a very short time, by concentrating the action in the cerebro-visceral nervous system, and produce death from pain. It may also,

when in the same degree, produce a rupture of the stomach, or of the heart or blood-vessels, cause an extravasation of blood by exhalation in the brain, in the tissue of some other viscus, or in an internal surface, a still more efficient cause of agony and sudden death. We will refrain from citing the facts on which these assertions are grounded; we are in possession of many, but our design is to elucidate science and not to attack individuals. Men of candour will themselves be convinced by the observation of facts of this nature which their practice or accidental circumstances will present to them, and this is sufficient for us.

It may now be conceived how individuals subjected to excessive stimulations may recover; it is because the irritation is completely dissipated by the super-secretions. It will be equally understood why they suddenly expire, and why many, after having been thought cured, remain for a long time in a state of languor and constantly-recurring debility. But it may have been remarked, that the artificial evacuations which have been produced, are not confined to super-secretions; hæmorrhagies and external inflammations may have taken place. These phenomena, in fact, belong to the crises; and let it not be asserted that inflammations of the periphery are an exception to the rule we laid down at first—the necessity for an extraordinary irritation to terminate in an evacuation. These phlegmasiæ, in fact, must themselves terminate by an excretion; they then only retard for a time the secretory solution which is rendered necessary by the development of the first irritation.

Here then we see the number of crises greatly increased; they are no longer confined to super-excretions by the ordinary channels; we find every kind of evacuation among them. Our object must now be to apply, if possible, these two general orders of evacuations to different grades of local irritations. When an irritation of the viscera is moderate, it seldom requires any thing more than the ordinary evacuations to terminate it, those which daily occur in the normal state; but when it is very great, when all the *visceral apparatuses* are violently disturbed, (remark that we do not say all the *economy,)* these evacuations are no longer sufficient; other kinds of crises become necessary; hæmorrhages, phlegmons, buboes, or erysipelas appear to aid oppressed na-

ture. Sometimes even the excess of the evil is here the source of benefit; a visceral irritation which might not have been removed by ordinary evacuations, completely yields to a horrible super-stimulation which adds to the super-purgation, and the excessive sweats, alarming hæmorrhages, or vast external inflammations terminated by a very profuse suppuration. We will cite in corroboration the plague, yellow fever, and confluent small-pox, in which the irritation is often very intense of itself; finally, the Rasorian cures, in which it becomes so always accidentally.

Notwithstanding all that has been said, we feel that we have not yet examined the subject sufficiently; we must compare, as regards the crises, irritations of external parts, with irritations of internal viscera of the first order. We have said that every morbid irritation must terminate either by convulsions or by evacuations; is this assertion applicable to a phlegmon, an erysipelas, an arthritis, a boil, herpes, &c.? Our reply can only be in the affirmative: do not disturb these irritations and you will see that, whether they terminate, or are indefinitely prolonged, the phenomenon of extravasation will not fail to appear; it will take place either in the form of suppuration, or that of crust, or else in the interstices of the organ, in the form of engorgement, œdema, concretion, &c.; but it will always occur; that is, the evacuation will never be found wanting in irritations which implicate the vascular system; so faithful is nature to the laws she has imposed on herself! From all these facts it results, that the crises consequent to vascular irritations are subjected to the same laws, and only differ in proportion to the quantity of fluids that penetrate the irritated organ and the relations that it holds with other organs. The visceral apparatuses of the first order propagate their irritations to organs which are subordinate to them; oftentimes the former relieve themselves of their irritations, and suddenly transmit to the latter, so that the crisis appears to take place solely by the medium of these latter.

Some external organs, which exercise a similar empire over the adjacent tissues, also oblige them to partake of their irritations, and sometimes appear to make them serve for their crises; thus the eyes act on the lachrymal glands, and the membrane of the mouth on the salivary glands. But in the greater part of

the skin, in the extremity of the limbs, &c. these kinds of local relations do not exist; the points of vascular irritation cause their own crises, except the irritation be sufficiently intense to cause a derangement in the viscera; but this question belongs to the succeeding proposition.

PROP. XCVI.

If the irritation proceed from the exterior to the interior, or from one viscus to another more important, the disease is aggravated. These are the false crises of authors.

How often have not physicians been the dupes of these false crises in acute affections, when they have made use of antiseptics, tonics, and evacuants! A patient appeared debilitated, attributing his weakness to putrid humours, it was proposed to evacuate them by purgative draughts; alvine evacuations were then induced; these were kept up to afford a perpetual drain to the impurities; diarrhœa was established; this was looked upon as a favourable crisis, which they were happy in being able to produce, whilst, in fact, this pretended crisis was nothing but the propagation of the phlogosis, which reached the large intestine, and exhausted the patient by abstracting the nutritive materials from the absorbents. At other times it was deemed proper to correct the putridity of the blood, which appears to be demonstrated by the fetor of the exhalations and excretions, by means of aromatics, spirituous liquors, camphor, musk, bark, &c. or else, in adopting more modern explanations, it was thought that the primary cause of this putridity can be attacked by maintaining the strength by these tonics and stimulants. In fact, the pulse became fuller and more frequent, the skin higher coloured and hotter; they flattered themselves *that the vital forces have been increased,* and they were full of hope; but dyspnœa, a furious delirium, subsultus, convulsions, &c. prove that the pretended restoration was reduced to a consecutive development of the phlegmasia in the brain, and in the parenchyma

of the lungs. After the fatal termination, these practitioners allege that nature, aided by appropriate succours, had attempted a crisis, but that, not having had sufficient force to accomplish it, she was obliged to yield.

There are many cases where the propagation of the primitive point of irritation, far from adding to the heat of the skin and force of the pulse, on the contrary, diminishes them, and augments the debility of patients; this is what is observed when the inflammation has traversed the hollow organs of the abdomen, and has attacked the peritoneum, when the pericardium is phlogosed, &c. Then the physicians are no longer, as in the preceding case, misled by agreeable hopes; they frankly admit that every critical effort has failed, &c. As for ourselves, being physiological physicians, these facts must serve to confirm what has been heretofore advanced, that every organ has its particular sympathies, that the group of symptoms always changes with the principal point of the irritation, and that the theory of crises is but a vain chimera when it is not connected with the irritation of organs and apparatuses.

PROP. XCVII.

Irritations have no fixed duration or progress; both are determined by idiosyncrasy, and by the influence of the modifying agents which act upon the patient.

It is astonishing, that after having observed so many irregularities in the march of diseases, that there should have been so much obstinacy displayed for such a length of time in wishing to assign to most of them a determinate duration and course. This arises from sufficient distinctions not having been established in what it was wished to attribute to several very different groups of symptoms as regarded their seat, cause, and intensity of irritation, which only belonged to certain grades of the latter: let us endeavour to give an idea of these differences.

When a vital erection has transcended the normal degree, that is, the degree where a cessation of the stimulating cause is suffi-

cient to induce its decline, or, in other words, when the vital erection has attained such a degree of intensity that it can persist without the aid of an extraordinary stimulation, this vital erection pursues a different course, according to the tissue in which it exists, the cause which has determined it, the vital erections that sympathy may have developed in other regions, and finally, according to the influence of accidental modifying agents on the economy.

1st. *According to the tissue.*—If the fasciculus of capillaries is very sanguine, the vital erection becomes morbid, has a tendency to persist there, and to assume the characters of inflammation; when this is once developed it tends to suppuration, and its course may be nearly determined *a priori*. Sometimes sanguine exhalation takes place, and removes the erection. If the irritated tissue is at the same time nervous and sanguine, if it belongs to those which sympathize actively with the eliminating organs, the vital erection may, according to the idiosyncrasy and its own degree, either remain in its first seat, and follow the same course as in the preceding case, or be displaced by the irritations to which its sympathetic relations have give rise, and then act according to its seat and degree. If the vital erection occupies a hard tissue, where it with difficulty can undergo a considerable development, different results may take place, according as this tissue is more or less sensible and nervous; if it is very great, pain, the inseparable attendant on vital erection, will always have a tendency to develope the sympathies, and these may, as in the preceding case, displace the primary morbid irritation; if it is slight, the vital erection will be persistent and obstinate, and the local effects will vary from several causes, which it is not our object to enumerate at this time. Here then are some differences derived from the nature of the tissue; we could greatly extend them, but we think that all the facts may be explained like those we have just indicated; the phlegmasiæ, hæmorrhages, neuroses, and inflammations, may be associated with them without any difficulty. For those who may doubt the relations of pain with inflammation and gangrene, we will relate the following case. A man had his leg amputated; three years afterwards he had a fall on the stump, succeeded by excessive pain

in it, which lasted for several days in spite of narcotics and the most energetic revulsives. Suddenly it was transferred to the other leg, and a phlegmasia was developed there, which immediately passed into gangrene. Amputation of this leg was practised, and succeeded perfectly. Is it not clear that in this case there was a transformation of a neurosis into a phlegmasia? This fact was communicated to us by a physician who destines it for a work he is about to publish. It is certainly very valuable, but it is not a solitary instance: neuralgiæ are sometimes seen converted, *loco ipso*, into inflammations or sub-inflammations, which run the course of other affections of the same nature. A violent pain, accidentally developed in a nervo-sanguineous tissue, often gives rise to phlegmasia in it; why may not sympathetic pains produce the same effect? There is but one general fact which connects all others together—this is irritation, and without this invaluable guide there would be no theory in medicine.

2d. *According to the cause.*—The causes of our irritations are exceedingly numerous; we cannot, therefore, advert to them separately at this time. We will only remark, that there are a great number to which our organism is familiarized, and which, although capable of causing a high degree of morbid erections, are easily overcome by other modifiers; but there are certain causes which act but rarely on our organs, and which, when they do attack them, always develope violent irritations, and always give rise to them in tissues which are both the most sanguineous and most nervous, that is, in the most irritable, the most fitted for the development of a violent primary morbid erection, as well as those of a secondary or sympathetic character. Such are the causes of those acute phlegmasiæ, termed eruptive, of many kinds of typhus, yellow fever, &c. In all these cases the vital erections progress with an extreme rapidity, either in the parts primarily affected, which are always the internal surfaces of the viscera, or of the brain, or in the eliminating organs, at the head of which is the skin, and sometimes the subcutaneous lymphatic ganglions. These vital erections, we repeat, often have a fixed course, and which may be determined *a priori*. We say nothing of several more or less active extraordinary causes of morbid vital erections,

as the poisons: observation will teach to what point it is possible to ally them with that we have just noticed.

3d. *According to the vital erections which sympathy may develope in other regions.*—We have mentioned the development of these sympathies in the explanation of what happens in certain seats, certain degrees, and certain causes of morbid vital erections; it now remains for us to give some idea of the influence they exercise on the primary irritation; they displace it in some cases, as in the slight eruptive phlegmasiæ, some arthrites or neuroses, and even in several glandular affections; in other cases they are not even able to weaken it, and in these cases it is always exceedingly intense. Then these sympathies are only epiphenomena which add, without any compensating effects, to the sufferings of patients. Refer to what we have said on metastases, crises, &c. It will be perceived how much the progress and duration of groups of symptoms must vary in the different circumstances which we have indicated; therefore we shall avoid dwelling upon them.

4th. *According to the influence of accidental modifiers of the economy.*—The solution of this question is prepared by that of the preceding; for, in influencing the march of a morbid vital erection, the modifiers which we have indicated, do nothing except provoke new erections, which would act revulsively on the first, or immediately on each, by means which are fitted either to abstract the local causes of the stimulation, or to add new ones to it. But the development of these facts will prematurely lead us into therapeutic details.

PROP. XCVIII.

Irritation has a tendency to propagate itself in similar tissues and organic systems: this constitutes the diatheses. Nevertheless, it sometimes passes into tissues entirely different from those in which it originated, and this occurs more frequently in acute than in chronic diseases.

The word diathesis has received several acceptations in medi-

cine; there is an inflammatory diathesis to designate a disposition to inflammation, which manifests itself by the extreme facility with which the slightest excitations determine the appearance of this phenomenon, either in the skin, under the form of a boil or erysipelas, or in the mucous membranes, or even in the cellular. This disposition is usually produced by the action of excitants; it is observed in those who have used substantial food, spices, and fermented liquors to excess, and who are in a plethoric state; in young, irritable, and sanguineous subjects, who are exposed to the unaccustomed influence of atmospheric heat, when residing in a warmer climate than their own. In all these cases the super-irritation begins by establishing itself in the mucous apparatus of the digestive canal, in the heart, in the brain, whence it is readily transmitted to the external organs and the viscera of the second order, as the urinary passages, &c. where it may be invited by an accidental stimulation. We have not placed the lungs in the number of tissues predisposed to inflammation from the influence of unaccustomed heat, because generally they are not so; the derivation to the external surface preserves them from super-irritation, and may even relieve them from it, if its tissue has as yet experienced no alteration; but in this latter case, heat would hasten its destruction. This state of the enonomy is allied to the *inflammatory diathesis* of Cullen, admitted by his pupil Brown, and the followers of this latter, who have given much extension to it. (See what we have said on this subject in the commentary on Prop. LXXII.)

This disposition generally lasts during the whole continuance of acute phlegmasiæ of the great viscera; it is equally observed in inflammations of the locomotive apparatus, whether acute or chronic; whence the rheumatic and gouty diatheses, which are characterized by the tendency of the articulations to contract irritation, whatever may be the cause which may have developed it in one of them. The chronic cutaneous phlegmasiæ, which so often assume the sub-inflammatory form, the ganglionites which almost always present it, furnish so many examples of these diatheses, which were formerly attributed to special humours, to acrimonies, and which since have been designated by the terms *vices, morbid or morbific principles*, because no one any longer dared to attribute them to depraved humours.

Nevertheless, as the terms vices, principles, and diatheses, do not comprise the idea of the nature of the evil, since they only express the mere fact of its existence, a generic expression must necessarily be desired, founded on something positive, and that of irritation appears to us at present, the only one that can be admitted without hypothesis. First, this expression gives the idea of the physiological modification, afterwards it adds to it that of the cause; finally, it suggests that of the remedies, which completes the notions on the nature of the disease; a precious advantage, which is not afforded by the expressions hitherto admitted. However, this expression is not sufficient, if another word be not added to it, for some idea must also be given of the course of these irritations. The word *propagating* appears to us as too general; for what irritation has not a tendency to extend itself? We prefer that of *diathesic*, as presenting the idea of a particular disposition of the economy, in which several affections of the same nature manifest themselves in different spots.

We shall therefore consider hereafter, as *diathesic irritations*, those which developed under the influence of an irritating cause, have a tendency to appear in other regions of the body, and in the tissues and organic systems, analogous to those which were first affected. At the same time, this definition does not exclude the possibility of its propagation to other tissues or other systems, because the general proposition, which states that irritation may traverse the body in every part, precedes this, as embracing a greater number of facts, and even includes it as one of its modifications.

PROP. XCIX.

When irritation accumulates blood in a tissue, with unusual tumefaction, redness and heat, and to an extent sufficient to disorganize the irritated part, it is termed inflammation.

The propositions previously laid down embrace all kinds of irritation; the present only relates to one of them—inflammation.

The word irritation receives two acceptations in physiological language, which it will be well to distinguish. This word is employed to represent the action of the cause which produces irritative diseases; it is always a stimulating agent, as we have before proved, which when it comes in contact with the tissues, exaggerates the vital action, either in the spot with which it comes in contact, or in some other which sympathizes with it. This morbific action of stimulating agents is often called irritation; but the word *stimulation* is the best, and we think it is better to adopt it, and to reserve that of *irritation* to represent the morbid state produced by stimulants. But, it is in the second sense that this word is employed in the proposition. It is known that we have distinguished four species of morbid irritations, inflammation and hæmorrhage which have the strongest relation to each other, sub-inflammation and neurosis, each of which ought to be treated separately. The first, or inflammation, which we are at present discussing, is sufficiently characterized by the phenomena enumerated in the proposition; but is it not necessary on this occasion, to reply to the objections of certain critics? Do you know, say they, what is the intimate nature of inflammation? We know that it is one of the products of stimulation; that whilst it lasts the blood is attracted to the spot it occupies, that the temperature is augmented there; that the sensibility is exalted; that the organization of its tissue is menaced; that the abstraction of blood, that of caloric, and certain agents which we term antiphlogistic, destroy it. Doubtless it would be very desirable that these latter were more numerous and more efficacious, but finally, whatever they are, they suffice to prove to us that this state of the economy which we name inflammation, is one mode of irritation of our economy; and certainly there are none of these opinions that prevent our pushing our inquiries still further, or which tend to mislead and withdraw us from the proper direction. In fact, inflammation is irritation of a tissue; hence the idea of applying sedative modifiers to this tissue, and of provoking another irritation by stimulating modifiers in a part where the inflammation involves less danger, the inflammation is attended with sanguine congestion, hence the idea of abstracting blood from the inflamed part. This is what we think constitutes the nature of inflamma-

tion; but we neither have nor can have the pretension of explaining why stimulants are stimulants, why stimulation produces at one time inflammation, at another a different kind of irritation. As well might it be asked why our organization is such as we see it.

Although the reünion of the four phenomena indicated, (tumefaction, redness, heat and pain,) be necessary to characterize inflammation, at the same time but two of these are peculiar to it; these are redness and heat; tumefaction and pain are common to several other affections. Now, as the blood is the source of the two peculiar phenomena, it is clear that they will present, as regards their intensity, differences corresponding to the quantity of blood that penetrates into each organ; consequently, in proportion as the tissues are more sanguineous, will be the marked character of these two phenomena. Hence one series of grades of inflammation, from the most intense to the slightest, and the melting of this into sub-inflammation. Bichat perceived this, and it was sustained in a thesis by one of his pupils. One of the great errors of the old school, was having always assumed as the type of inflammation, that of its highest degree, or phlegmon. But the consequences of this error have been so much dwelt on in the *Examination of Medical Doctrines*, that it is sufficient for us merely to advert to it.

PROP. C.

Inflammation, even when intense, is not necessarily accompanied by local pain.

The parts in which sanguineous vessels are developed with most freedom in inflammation, are not always those in which the pain is the most intense; the greater or less aptitude of a part to pain, depends on the disposition of the nerves. Two sorts of tissues are peculiarly adapted to cause a sensation of pain—the skin and the serous membranes. The cutaneous inflammations, therefore, are always very painful, and it is solely the vicinity of this covering that renders subcutaneous phleg-

mons much more painful than those which are deeply situated in the organs. The same observation applies to serous membranes; their acute phlegmasiæ are accompanied with acute pains, and those of sanguineous capillary, cellular, or parenchymatous tissues that are situated beneath them, do not cause violent pain except when these membranes participate in it. Examine, in fact, the pulmonary phlegmasiæ when they are confined to the parenchyma, the sensibility may be so obscure that the disease may be entirely overlooked; but when they extend to the pleura, pain is developed there with such acuteness, that no one has a doubt of the seat of the inflammation. It is the same with the brain, the liver, and the spleen, considered in their relations with the serous membranes, that invest them. After having made these remarks, you may turn over to the ancient authors, and you will be convinced that acute phlegmasiæ of the skin, subcutaneous phlegmons, pleuro-peripneumonies, arachnitis, and phlegmonous inflammations of the abdomen implicating the peritoneum, have always furnished the type on which they formed an idea of inflammation. It is from them they have derived the four characters still generally admitted at the present day. But whenever the pain and tumefaction ceased to be perceptible to the senses in the focus of inflammation, the disease was misunderstood. Now physiological physicians are aware how multiplied these cases are; they form the subject of the following propositions.

PROP. CI.

The local pain of inflammation offers many varieties which are dependent on the mode of sensibility of the part, and the degree of sensibility of the individual.

We have just seen inflammation in tissues which are at the same time very sanguineous and very sensible; but how many exist which are sensible without being sanguineous, or which are very sanguine with very little sensibility? how many others again which are neither sanguineous nor sensible? There is no one,

however, which may not be attacked with inflammation. It may be judged from this how variable must be the pain which this phenomenon will render perceptible. The sensations of heat, rupture, perforation, pricking, distention, weight, fullness, &c. are as appertinent to inflammation as to neurosis, because every pain always depends on a modification of the nervous matter, and that different causes may excite the same mode of stimulation in this matter. It is therefore impossible to identify the phlegmasia with a single kind of pain, and, for this reason, to point out a type of pain which may be applicable to all inflammations. There are even some in which pain is not perceptible, because it is too confused, or is effaced by the sensations arising from the exercise of the functions; thus arteritis and phlebitis in deeply situated vessels, cause no distinct sensation, and are only recognised by the alterations they have produced. It would not be asserted, however, that these phlegmasiæ are exempt from all pain; for, when they occupy external vessels, patients perceive a very distinct sensation of heat there. Many other deeply situated tissues would furnish us with analogous examples; but more ample details appertain to special pathology.

It is not useless to fix the attention of practitioners on the constitutional differences of the sensibility. If the faculty of sensation is so obtuse in many individuals, that it requires to use the expression of a celebrated writer, *to flay them in order to tickle them;* if, on the other hand, certain individuals enjoy so exalted a sensibility, that the simple exercise of their functions is sufficient to torment them and inspire them with disgust of life, it must be evident, of what prodigious varieties of pain inflammation is susceptible, if they are considered in the different kinds of tissues and in the different grades of intensity which they may present. There are stimulating modifiers which appear to enjoy the unhappy privilege of developing sensibility in the most obtuse individuals; we shall hercafter find occasion to mention them.

PROP. CII.

Inflammation often excites more pain in the parts sym-

pathetically affected than in those which are the original seat of the irritation. Inflammations of the mucous membranes of the stomach, of the small intestines, and of the bladder, offer daily examples of this.

Yes, we have the happiness to be organized in such a manner that the internal surfaces of our body with which foreign bodies come in contact do not occasion us too vivid sensations, so long as their excitability has not been strongly exercised. This may be constantly observed during youth, and in individuals who have not used stimulants to excess. The first irritations which are developed in the digestive apparatus, which I take as an example, because the mucous membrane is there more irritable than elsewhere, provoke only a sensation of such confused pain, that it is soon effaced by those which are referred to the brain and organs of motion; so that it may be truly said, that irritations of the digestive mucous membrane, must in the pathological as in the normal state, be less felt in the nerves of the eighth pair than in the other cerebral nerves. Oftentimes even it is solely by a sensation of general uneasiness which inspires inquietude, depression and melancholy, that these irritations are manifested, and if the want of appetite, thirst, loathing, derangement of the bilious and mucous secretions do not direct attention to the stomach, it would be imagined that the lesion of this viscus was the only cause of the disorder. It is nearly the same with other organs lined with a membrane of relation. The pains of the internal surface of the bladder, although this organ has many nerves of relation, are often ill-defined at their commencement, and referred to the extremity of the urethra, to the groins or loins; those of the uterus are equally felt in the circumjacent locomotive apparatus. In parturition the first pains are experienced in the loins. The irritation of the mucous membrane of the bronchiæ is referred to the larynx and to the parietes of the chest whenever it is seated in the deep ramifications of these passages; but when inflammatory or other irritations of mucous membranes are seated in the vicinity of their openings, they are distinctly perceptible in the spot they occupy. This difference can only be attributed

to that of the nerves which preside over these different regions; the preponderance of the great sympathetic in the portion of the mucous membranes that lines the interior of the visceral cavities denaturalizes the sensations there, and transmits them or rather causes them to be felt in nerves which do not appertain to the cerebro-spinal apparatus; but as these last nerves are most numerous at the openings of mucous membranes which are all external senses, the irritations developed there are referred to their true seat. Such is the principal difference between the external and internal senses, and so long as it was not understood, medicine could not be based on a solid foundation, and the greater number of visceral inflammations must have remained unknown. There has necessarily existed much variance as regarded theory and practice, between the inflammations of parts over which the encephalic nerves preside, and those of internal tissues under the dominion of the great sympathetic.

Nevertheless, inflammations of the visceral mucous membranes may sometimes be painful; and it is not less curious to learn the reason of it, than to know why the organs with which they sympathize may appear more sensible and diseased than they themselves are.

When an isolated ulceration forms, from the effect of a phlegmasia for a long time fixed and kept up in the depth of the viscera, by energetic stimulants, it is not uncommon for the mucous membrane then to become sufficiently sensible to enable the individual to indicate the precise seat of the disease; but when there are several, the pain is often ill-defined. Often also certain isolated ulcerations determine two painful points, one situated in the diseased part, and the other exterior to it in some part of the muscular apparatus. Inflammations and erosions of deep-seated mucous membranes, occasioned by caustic poisons, are always those in which the local pain is the most clearly perceived; this would appear to arise from the alteration being suddenly developed, transmitting to the sensorium stimulations very different from those which the rest of the membrane transmits to it; the stomach, and the large intestine in cases where a concentrated acid or a corrosive salt is introduced into them, the bladder when sulphuret of potassa is injected into it, the bronchiæ when an acrid vapour or a

foreign body have penetrated into them, the neck of the uterus when too acrid an injection has come in contact with it, sometimes furnish a proof of this; but if the irritation of these membranes is developed and increases but slowly under the influence of agents of a moderate activity, the ulcerations which form in them are most generally either but slightly painful, or are indicated by sympathetic pains rather than by that of the diseased part.

The long-protracted use of excitants of all kinds almost always terminates by elevating the sensibility of the mucous membranes to a degree which renders the functions of the organs very painful. As the stomach is, of all the viscera, that which is most exposed to super-stimulations, it is also this viscus that furnishes the most frequent examples of this vicious exaltation of sensibility. In youth, gastrites are most generally manifested through the sympathies; but when the individual, arrived at a more mature age, has suffered for a long time from the stimulation of food, tonics, antispasmodics, &c. the stomach becomes so sensible that it is a continual source of torment to patients; then to the sympathies which have gradually increased, are added local pains, which are extremely various, and nothing is more difficult than to diminish this vicious sensibility. It even happens tolerably often that the small intestines participate in it, although in the normal state they are less subject to it than even the stomach, from the few cerebro-spinal nerves that are distributed to them. Hypochondriacs may be cited in proof of these assertions. The art of managing the sensibility of internal membranes of relation is then one of the most important points of the physiological doctrine; the practitioner must be accustomed to recognise their irritations from the sympathies; he will always find sufficient of them for this purpose, and we cannot approve of the advice given by some physicians, to administer stimulants in order to ascertain the seat of a disease that appears doubtful. Irritations of the visceral parenchymata, which do not implicate their serous membranes, only give rise to ill-defined sensations, except when they are developed with an extreme rapidity. The acute serous inflammations are most generally very painful, whilst the chronic

are very little so. Acute pleurisies, however, are met with, which are entirely indolent.

PROP. CIII.

When inflammation is unattended with pain, it awakens only organic sympathies.

On reflexion, we have ascertained that this proposition is inaccurate. There are many indolent chronic phlegmasiæ, which are accompanied with sympathies of relation. At first, whenever the inflammation is sufficiently intense to produce fever, it awakens the sympathies of relation; witness acute gastro-enterites, many of which are without local pain, and acute and chronic pneumonia, which oftentimes do not present it. The fever which corresponds to these phlegmasiæ, is always, at least during the paroxysms, accompanied with sensations of fatigue in the muscular apparatus, oppression, and lesions of the functions of intellect, which constitute so many sympathies of relation. Then there are many chronic gastrites and gastro-enterites unattended with fever, which are not habitually painful, which only become so at certain periods of digestion, and which nevertheless always induce sympathetic pains in the muscles, or act on the sensitive apparatus so as to produce a grade of hypochondria. Even the apyretic irritations, which unite the four characters of inflammation, almost always act on the brain, and produce certain nervous phenomena, either muscular, sensitive, or intellectual. But there are many very chronic sub-inflammations, appreciable to the touch, which are indolent, which induce no pain, no convulsive movements, do not derange the functions of the brain, in short, which only provoke the organic sympathies; such are depraved nutrition or secretions, alteration in the colour of the skin, diminution of the forces, that state, in short, which has been termed cachexia or cacochymia. Dropsy may also be the result of it. In consequence of these reflexions we think that the proposition ought to be modified and be presented in the follow-

ing form: *When the inflammation is unattended with pain it awakens the sympathies of relation less than when it is painful; there are even many indolent sub-inflammations, subsequent or otherwise to true phlegmasia, which excite only the organic sympathies.* In fact, with these latter may be associated a great number of chronic pleurisies and peritonites, which after having given rise to violent pains, have become entirely indolent, and have in some degree passed into the sub-inflammatory state, as is proved on a post mortem examination, which exhibits the serous tissue thickened, become fibrous, cartilaginous, osseous, lardaceous, tubercular, &c. with effusions of more or less concrete lymphatic matter. In the same category may be arranged certain engorgements of the cellular tissue, contained between the laminæ of the mediastinum, several of those which are developed in the mesentery and omentums, either primarily, or following an inflammation of the two membranous surfaces; these comprehend a great number of the obstructions of authors, some indolent tumours but rarely or momentarily painful, which are formed on the exterior in the cellular tissue of the limbs, between the muscles, the aponeuroses, the tendons, &c. from the effects of a contusion. All the sub-inflammatory tumours whose texture is lardaceous, steatomatous, or looking like the pulp of an orange, reäcting silently and in virtue of purely organic relations, on the principal visceral apparatuses, and on the tissues composed of the same principles as themselves, produce paleness, a wax-like colour, a certain languor of the functions, and a repetition of the mode of alteration which characterizes them, that is, consecutive sub-inflammations in parts more or less removed from the spot in which they originated.

PROP. CIV.

Inflammation always alters the fluids of the inflamed part.

This alteration is the necessary effect of the change of the vi-

tal affinities. There is always in living bodies a relation between the action of solids and the composition of fluids. In fact, it is clear, that if the molecular affinities of the fluids were not directed by the solids, they would resemble those we see in the humours when separated from the body, that is, they would induce the decomposition and destruction of the particular form of the state of life. But on the other hand, the changes which the solids effect in the fluids, cause these to act differently on them; that is, they stimulate them differently than before they underwent transformations; there is then a reciprocal action of the solids on the fluids, and of the fluids on the solids. No one is ignorant of this fact, hence we only advert to it to make some inductions on the effects of inflammatory congestions.

We have elsewhere seen that all diseases of irritation were produced by irritations derived from the exterior; hence, when stimulations shall have developed a phlegmasia, the circulating fluids invited to the focus of irritation, receive there from the solids a different impulsion from that of the normal state, undergo molecular affinities different from that state, and in their turn must exercise a stimulation on the solids which have changed them, also differing from the normal state.

But, will it be said, are the fluids, which the irritation accumulates, in a focus of phlegmasia, retained there till the termination of this inflammation? are they not, on the contrary, constantly changed for others? Although the solution of this question is not indispensable, as regards the treatment, it may be advantageous to touch on it. The microscopic experiments made by Dr. Sarlandiere on the circulation in the mesentery of frogs, and which I witnessed, (see the memoir published by this physician in Vol. I. of the *Annals of Physiological Medicine,*) have shown that the molecules of blood accumulate in an irritated point; that those in the centre appear to be stationary, whilst those of the circumference only are changed, unless a new point of irritation is formed, more active than the first; for then all the globules are disengaged from the circumference towards the centre, to obey this new call, and the first congestion is dissipated. Might it not be supposed that something nearly analogous

occurs in the inflammations of warm-blooded animals, at least in those of a phlegmonous grade? The blood at the circumference is renewed to a certain point. This must, in reality, be so; otherwise the tumefaction would increase in an unlimited manner, and the stagnation of the blood would become general. As to that of the centre and the humours in the cells, humours which are mingled and confounded with it, it is clear that these fluids cannot be resorbed until the irritation which retains them is allayed. It is during this stoppage that these humours, which are not stationary, but subjected to an intestine motion, become altered, deviate from the normal state, that the solids themselves are resolved into fluids, and that suppuration is forming, bringing with it a real disorganization. It may be understood from this, how the blood, altered by the local super-action, becomes a stimulus to the tissues in which it is confined, and keeps up the irritation. This proposition may the more readily be admitted, from the fact, that if blood be drawn from a phlegmonous focus, it is much darker and more charged with cruor and fibrine than that extracted from the adjacent tissues. It is equally comprehended, that the pus, at first innoxious, is decomposed by remaining, and becomes a new stimulus to the tissues that enclose it. Finally, it is easy to conclude from this, that if this pus is resorbed, instead of being eliminated, it will act on the principal foci of life, like the septic poisons, and keep up a secondary fever, which we have called hectic from suppuration.

We believe that this is the course of things in phlegmon; but it is not the same in all the other grades of the inflammatory state. When the irritation is slight, and occupies a large surface, does not extend deeply, and communicates with the exterior of the body, a continual excretion occurs, which moderates the tumefaction of the organ, and prevents a stagnation of the humours. The circulation continues to go on there, but this does not prevent the blood, whilst traversing the inflamed organ, from undergoing a very marked change. This fact is also proved by local bleedings, which furnish a darker and more fibrinous blood than the adjoining parts. On the other hand, we are not ignorant that the humours secreted by the membranes, thus attacked with inflammation, are different from those of the normal state,

and that often they exercise a violent stimulation, not only on the spot whose sensibility is augmented by the inflammation, but also on the healthiest parts.

The alteration of the fluids is not confined to the focus of the inflammation; oftentimes the whole mass of the humours experiences a change in its composition, as is attested by the buffy coat which forms on the blood; at other times the alteration is only perceptible in the product of the secretions and exhalations.

There are considerable differences in the alterations which the stationary or circulating fluids undergo during the continuance of phlegmasiæ, from the most active inflammation to that which is least so, and which loses itself in sub-inflammation. Therefore, to confine ourselves to local alterations, the fluids converted into pus, sometimes irritate the parietes of their foci, and at others remain stagnant, without harassing them except by compression, as may be observed in many cold abscesses and in collections in serous membranes; at other times, the inflammation terminates by a red induration, which remains stationary and excites none of the phenomena of irritation. There is no doubt, however, that the fluids are likewise altered in this kind of congestion. Finally, there are grades of suppurative inflammation, especially in free surfaces, which may persist without exercising much action on the economy, or even causing it to experience much pain. Sensibility is not developed there except when the organ is forced to an extraordinary action, and it soon returns to its habitual state; such are many bronchites, gastrites, and cutaneous phlegmasiæ like those produced by exutories. We now ask, must as many inappreciable material causes—as many particular morbid entities be admitted, as there are grades of these local affections, and is it not evident, that we can perceive in them nothing except different states of the phenomenon of inflammation? Certainly, and it is not to the alterations of the fluids that resort must be had, to explain the different grades of inflammation. This error, however, has been committed for a long series of years, and if it no longer exists in the theory, it is still to be found in the therapeutics of the ontologists. Hence, specifics against the humours are no longer spoken of, but against rheumatic, gouty, and leprous entities, and against putridity, for this decomposition

of secreted or exhaled fluids is attributed by the Brunonians to the languor of the vital forces, a languor for which stimulants have become the specifics. Finally, you will remark, that notwithstanding the change of language, the substitution of the abstract being *disease*, for the material being *morbid humour*, the specifics of the ontologists are still the same as those of the humoralists of former days. It was particularly to arrive at these conclusions, that we have dilated on Prop. CIV, but it results from our dissertation, that this proposition is too restricted, and that it would be better to present it in a form which will express all the alterations of the humours of which we have spoken. The following is the emended form, which it should hereafter retain:—*inflammation always alters the fluids of the inflamed part, and sometimes the whole mass of the humours.*

PROP. CV.

Inflammation may exist without suppuration.

Although this proposition may have been sufficiently proved by the developments which were required by the preceding, it appears advantageous to again advert to it; for there are still a number of practitioners who obstinately persist in assuming phlegmon as the fundamental type of inflammation. That inflammation can exist without forming pus, is a fact of which it is not permitted to doubt, when we have seen the red tumefaction of the skin which surrounds an issue, the dry indurations which environ a necrosed bone, the erythemata produced by heat, by cold and by numbers of irritating agents, and which may be indefinitely kept up without suppuration. There are also many cases where the same phenomenon may be observed on the exterior, for example, persons who have a habit of perpetually touching some part of the skin, or the openings of the mucous membranes, as the nose, the mouth, or the sexual organs, and keep up there a state of sensibility with redness and heat, but without any purulent excretion. The same occurs, in the eyes, which are affected by an excess of light, or by over use—in the margin of the anus, in

certain grades of a hæmorrhoidal affection—in the tongue—the soft palate, and the pharynx by the constant use of irritating food, or by the influence of a gastritis. These are slight grades of inflammation, but still they are inflammations, and if they receive a new impulsion, they might attain a degree which produces the pus collected in an abscess, or that excreted as it is formed.

Whatever takes place on the exterior of the body may equally occur in the viscera, either primarily, or consequently to a strongly marked inflammation. The abuse of stimulants irritates, heats and reddens the mucous membrane of the stomach without there being an augmentation of mucus in this viscus; it then enjoys only an exaggerated vital action, almost always accompanied with boulimia; and although it is attended with pain, the digestion is good and the plethora and *embonpoint* are augmented. The small intestines often partake in this state, which may in all these organs, be the sequel of a more intense inflammation, which has for a long time furnished a more or less copious morbid secretion. The brain is one of those organs which supports this morbid vital erection for the longest time without suppurating, as is proved by the cephalalgia, hemicrania, and feeling of weight in the head which so many persons experience after excesses of various kinds. The mucous membrane of the bronchiæ often becomes sensible, hot, and consequently tumefied, without there being a superabundant excretion. This modification may be primitive, but is most generally the consequence of imperfectly cured bronchitis. The bladder is often found in the same state, especially when the digestive canal is inflamed, as is demonstrated by dysuria without any mucous deposit in the urine. Muscles which are too much exercised, are in a slight grade of inflammation; it is the same with the heart in a great variety of circumstances which it is easy to imagine. It would be irksome to dwell too long on such details; let us observe however, that the serous membranes, and the areolar, ligamentous and serous tissues, are much less susceptible of this slight grade of vital erection with pain and congestion, without formation of pus. The matter of their exhalations almost always accumulates on the surfaces or in the interstices constituting a kind of suppuration. The membranes of relation and all parts of the sensitive and locomotive apparatuses are then the tissues which are most exposed

to the dry inflammations spoken of in proposition CV, which are common to membranes of relation and to all parts of the sensitive and locomotive apparatuses.

All these slight grades of the inflammatory state are recognised when they appear on the exterior of the body; but when they are seated in the viscera, common physicians observe nothing but the pain, the uneasiness, and the nervous sympathies, that they may excite, and they pronounce the word *neurosis*, always followed by the employment of stimulants, qualified by the title of antispasmodics or tonics, under the influence of which the disease becomes acute, or persists in the chronic state till disorganization takes place, most generally with a consecutive sub-inflammation. It was therefore necessary to support the proposition with a number of proofs which might render it clear, and make it practically useful, by sparing labour to those who wish to study it.

PROP. CVI.

Inflammation often leaves at its sequel a mode of irritation which bears a different name from its own, and produces a cacochymia which has been regarded as an idiopathic disease.

This proposition indicates all the morbid vital erections, which after having manifested the characters of inflammation, either externally or internally, lose them more or less slowly and only act on the economy by militating against nutrition, either because the diseased organ is one of the principal agents of this process, or because it deranges those which perform it, through the influence of sympathetic influences. Patients are then pale, weak, emaciated, often infiltrated and languishing. Affections of this character compose the class cachexiæ of nosologists. Cachectic patients when compared with each other present tolerably marked differences; some experience pains in the diseased organ, but these pains are not referred to inflammation; they are made subordinate to the general state, and ancient medicine combats them only by

pretended anodynes. Others, without experiencing much pain, complain that the diseased organ cannot execute its functions; this inability is generally attributed to the general weakness, and an indication for the use of stimulants is deduced from it, of this class are a number of dyspnœas, dyspepsias, constipations, &c. Others present nervous phenomena which attract the whole attention of practitioners, and the cachexia is considered as complicated with neurosis. If the diseased organ is so constituted as to acquire a considerable volume, which may be distinguished by the touch through the parietes, the disease is termed engorgement, or obstruction; finally, whenever on a post mortem examination a profound alteration in the viscera is discovered, it is at last confessed that an organic derangement exists, which some make subordinate to the symptoms which they have observed during life, whilst others consider it as the effect of a hidden vice, antecedent to every lesion, and from the influence of which it was impossible to withdraw the patient.

The cause of all these errors is now but too evident; it has been explained in the *History of Chronic Phlegmasiæ*, and confirmed by the numerous evidences detailed in the *Examination of Medical Doctrines*. The error arises from the symptoms having been studied, and abstract collections of them having been erected into a disease, before the pathological state of the organs was well known. But to be convinced that inflammation is the only source of these morbid states, which were so long believed to be of a different nature, there are two things to be done; the first to correctly observe the progress of inflammations, by tracing them in the same individuals during the whole course of their lives, under the influence of modifiers; the second is to employ a correct physiology to interpret the symptoms and organic alterations. But a correct physiology is not only applicable to the normal state; it equally stands the proof of the morbid or abnormal state; and it is in this double character that well-regulated minds will recognise it. It is to establish and propagate this, that all physicians, jealous of paying their debt to humanity, should incessantly labour.

PROP. CVII.

Inflammation often excites sympathies of relation, which have been considered the predominant phenomena by authors, and they have given to the disease the name of *nervous*.

We have already seen neuroses, as consequent to inflammation, become associated with cachexia or cacochymia; now it appears as equally the result of inflammation, but without cachexia. In fact, there are a number of cases, where the morbid vital erection of an internal tissue, raised to the degree of phlegmasia, produces nervous phenomena. Of all inflammations, it is peculiarly those of the mucous membranes of the great viscera, of the heart, brain, spinal marrow, and of the trunks or branches of the nerves of relation which produce the greater number of nervous phenomena. This truth, a long time unknown, is now completely proved, thanks to physiological medicine. It is to be thus explained.

Under the name of *neuroses*, there are generally comprehended two kinds of phenomena; the exaltations of sensibility and movement, and the abolition of these two phenomena, constituting palsies; hence two kinds of neuroses as respects the phenomena, the active and the passive. The active neuroses are possible in all the nerves of the human body. The passive can exist only in the nerves of relation, as the ganglionic nerves cannot cease to act till they are destroyed; whence it results that, as regards their seat, the neuroses may be distinguished as neuroses of the functions of relation and neuroses of the internal functions. We will presently enter into some details on these two kinds of neuroses.

The neuroses of the functions of relation always commence with excitation; they present pains or convulsions, or even these two phenomena united in a group of voluntary muscles, or in an external sensitive apparatus, and retain these attendants as long as the cause which produces them, that is, the excitation of the brain, the spinal marrow, or the nervous branches, has neither

produced too strong a compression nor disorganization, and for which there is no fixed period. But as soon as the compression has reached a certain point, or disorganization is effected, either in the brain, in the spinal marrow, or in a nervous trunk, the paralysis manifests itself in different degrees in the muscles and in the senses which had hitherto experienced super-excitations, and this paralysis is called consecutive. Sometimes the paralysis appears at once in an individual who had not experienced either pains or convulsions; but although primary, this paralysis is not the less dependent on irritation, because it always requires the intervention of this phenomenon to produce compression or disorganization of the brain, spinal marrow, or of a nervous trunk. The paralyses from division or ligature of nerves are the only ones which are an exception to this law; yet this exception is only apparent, for the instrument which cuts or presses on the nerve is an irritating agent, and if its effect were incomplete, it would produce the most marked phenomena of active neurosis.

The neuroses of the internal functions always present phenomena of irritation which are seated in the viscera destined to conservation or reproduction; they consist in extraordinary sensations and movements of these viscera, which are, the lungs, the heart, the digestive organs, the depuratory organs, or those of generation. But, as the pains of these viscera must be perceived by the brain, and the attendant movements cannot be executed without the concurrence of the respiratory or cephalo-splanchnic muscles, it is evident that the internal neuroses are necessarily, and from their commencement, accompanied with phenomena of relation. But this combination becomes much more striking as the disease increases, for to sensations perceived in the viscera, others are soon joined, which are referred to the apparatuses of motion and sensation; and the voluntary muscles shortly become convulsed, either from the simple effect of the vivacity of the sensations, or by an action simultaneous with that of the respiratory muscles. Hence no visceral neuroses can be independent of the neuroses of relation, whilst these last may very well exist without being accompanied with visceral neuroses. Such is the reason why the proposition states that the sym-

pathies of relation, having become predominant, receive the name of neurosis. But it also states that it is often inflammation which determines these predominant sympathies; and, in fact, arachnitis, spinites, phlegmasiæ of the large nerves, cardites, bronchites, pleuritis, gastro-enteritis, cystitis, metritis, nephritis, &c. imperfectly cured, or several times renewed by the return of the causes which produced them, are the most common agents in the production of all kinds of nervous affections; but is this to say that neuroses cannot exist without phlegmasiæ? certainly not; all the morbid vital erections do not attain to the grade of inflammation; the internal senses may acquire, under the continued influence of stimulants, a degree of irritability which produces impressions on the centre of relation capable of inducing convulsive movements; and on the other hand, the brain may become so irritable that a stimulation which would scarcely be perceptible in the normal state, may cause extraordinary sensations and movements, constituting real neuroses. We will say more; in this sort of idiosyncrasy, the inflammation sometimes becomes very difficult to produce, as if all the stimulations were dissipated by the nervous movements they determine. At the same time, although difficult to produce, ultimately the phlegmasia is generally developed in the principal viscera, and it is through it, that the existence of neuropathic patients is generally terminated, even of those in whom the nervous state, in which they have passed their lives, cannot be attributed to this cause.

All that we have said of the phlegmasiæ, is equally applicable to the sub-inflammations, even when primitive; it is sufficient that the irritation which constitutes them, be received by a very active and excitable nervous system, for neuropathy to be the consequence.

There now remains a final general question; why are not all inflammations constantly accompanied with neurosis? A distinction must here be established: no one can be protected from the neuroses of relation, since inflammation of the brain, the spinal marrow, and the nervous chords, are possible in every individual of the human species. But it is different with the neuroses of the internal functions; sensibility varies infinitely in the viscera, and it is only those who possess it to a certain degree, in

whom these kinds of neuroses can be developed. A predisposition to neuropathy must, therefore, be necessarily admitted; that is, to that excess of irritability of the nervous system, which renders an individual subject to all kinds of extraordinary sensations and convulsive movements; but this predisposition existing, the affection manifests itself under the influence of external stimulants; as soon as it is perfectly developed, nothing is so difficult as to cure it radically.

All the viscera which preside over the internal functions, being united by their association of action and their community of nerves, it suffices that stimulants should act on one of them, for the whole splanchnic nervous apparatus to acquire an increased action. Then all the irritations become excessive, and are followed by a multitude of more or less strange sensations, and more or less marked convulsive movements. At the same time, as of all the viscera, those of digestion, and especially the stomach, are the most nervous and the most exposed to stimulations, it is usually by them that the neuropathic phenomena commence; afterwards come the heart and the lungs, for it is always in acting on these principal foci that the irradiations of the viscera of the second order are enabled to develope the neuropathic state: the uterus itself, which so often gives rise to it, cannot induce it without the concurrence of the stomach, the heart, and the muscles associated with the functions of the great viscera, and the irritation that it occasions nearly resembles that experienced by these apparatuses, in neuropathy, which is independent of the uterus.

Now, if what was said of contractility and sensibility in the treatise on Physiology applied to Pathology, be remembered, we shall arrive, it appears to us, as near as possible to the determination of the predisposition under consideration. In fact, if contractility is the sole inherent property of the fibre; if sensibility is only one of the results of contractile movements; if this result supposes the action of the centre of relation; if this centre of relation can only exist in the brain, it follows, as a necessary consequence, that the predisposition to neuropathy belongs to the particular disposition of this viscus; that is, to the manner in which it reäcts on the impressions which reach it; if the impressions, although clearly and vividly perceived, do not greatly de-

range the functions of the brain, or the innervation, the individual will never be neuropathic, whatever may be the severity of the physical or moral sufferings that he may experience; if the impressions derange the innervation in a great degree, neuropathy, on the contrary, will be readily induced, will be removed with difficulty, and will recur from the slightest cause.

But, will it be demanded, what idea is to be formed of this derangement of the cerebral innervation which results in neuropathy? It is, according to us, a too ready and too active reäction of the brain on the causes of stimulation; in other words, the impossibility of the principle of reäction to restrain the movements, which agreeable or painful sensations have a tendency to occasion; hence the will is generally feeble in neuropathic patients...But, again, on what does this disposition depend? It depends, according to our views of the subject, on the very organization of the brain. But, we shall not now undertake to determine if it depends, in the first instance, on the mode of vitality of the whole encephalic mass, or on the deficiency or excess of development in certain regions of this apparatus. We shall touch on these questions in another place, but, as they are delicate, we shall be very reserved on the subject, and always be supported by the best attested facts.

At present, we would prove that the predisposition to neuropathy does not reside in the viscera whose more or less inflammatory vital erections usually produce it; for the gastritis of a hypochondriac is no more different from that of any other individual, than the metritis of an hysteric woman differs from that of one who is not so, but that it consists in the state of the brain. We would also add, that state of the brain is often associated with the general state of the economy which authors assign to their hypochondriacal and nervous temperaments, but which is also very frequently independent of them, and may even be associated with wholly opposite temperaments.

PROP. CVIII.

Inflammation does not change its nature by the diminution of the forces which it occasions.

This idea has been developed in proposition LXXX, as follows:—"Super-excitation and active morbid and partial congestion are compatible with a general diminution of the forces." It would be then useless to recur to it. The physician should seek the evidences of it in his practice.

PROP. CIX.

The irritations of all organs are transmitted to the brain, when they have acquired a certain degree of intensity, and especially when they are inflammatory; there then results an alteration of the intellectual and affective faculties and a state of pain and uneasiness, which is referred to the apparatus of locomotion. This sympathy, when in excess, is converted into encephalitis.

After having indicated, in a general manner, the progress of the irritation, we are prepared to observe it in each organ separately. The brain is unquestionably the first which receives it, which ever may be the tissue in which it has originated, and it is only by that organ that it can be reflected into the locomotive apparatus. Connect this proposition with a fact, known to every one, and take this sympathy at its origin. A person wounds his toe in cutting a corn; the next day inflammation is developed in it, the disease is, however, still local; but this inflammation increases, and the following day the person on rising, perceives that he has a head-ache; if he turns his head suddenly to look at any thing, he experiences confused movements in the interior of the cranium, he feels a sensation of weight in the frontal region, lassitude of body and limbs, disinclination for exercise, and a disposition to repose; this is what is called a painful weariness, *(courbature.)* Is it not evident that the irritation of the toe has propagated itself to the brain, and from thence has been reflected to the muscular apparatus? But let us follow the progress of this slight irritation of the brain: it is always in proportion to that of the toe and to the predisposition of the brain. Is the phlegmasia of the extremity slight and circumscribed? the uneasiness disappears

in two or three days, and it is observed that the contusive pains proceed from the trunk towards the muscles, and terminate in the forearms, hands, legs, and feet. If the original inflammation is aggravated, and extends over the whole foot, the uneasiness increases, the head becomes very painful, the mind is occupied with unpleasant ideas and fatal presentiments, and if the patient is predisposed to cerebral phlegmasiæ, he is affected with more or less severe encephalitis. It is thus that all acute phlegmasiæ originate, and the more nerves the organ has, in which the inflammation is seated, the greater will be its influence upon the encephalon. Phlegmasiæ are not the sole irritations which derange the action of the brain: all pains produce the same effect. Placed in the centre of the whole nervous apparatus, the brain is the rendezvous of all the irritations, whether agreeable or painful; it receives them from the nerves in which they originate, and reflects them immediately through all the others. Is it then surprising, that in executing this operation, it becomes sometimes itself the principal point of irritation, and contracts a true phlegmasia?

PROP. CX.

Intense irritations of all organs are constantly transmitted to the stomach from their very commencement; hence results loss of appetite, alteration of the colour of the tongue and of its mucus: if the irritation received by the stomach attains to the degree of inflammation, symptoms of gastritis appear, and as then the brain is always more irritated, it developes in a higher degree the sympathies which are proper to it and may even become inflamed.

If the brain reflects the irritations in all the nerves with which it is in communication, it is clear that those of the stomach must participate in it. But we will observe that this influence, in a state of perfect health, is more promptly exercised over the nerves of the muscular apparatus than on those of the stomach in that slight weariness produced by inflammation of a toe and which

we have taken for an example: uneasiness and muscular pains are first produced. These phenomena are the early effects of the suffering of the brain, because this viscus acts most promptly upon the nerves under its own controul than upon the great sympathetic. But if the health is not perfect at the period when the brain receives an irritation, that organ reflects the irritation most powerfully upon the most irritable point. Suppose then that the person with the phlegmasia of the toe has already a very irritated stomach, the symptoms of gastric disorder enumerated in the proposition, and which are nothing but a first degree of inflammation, will become developed as promptly as the pains in the locomotive apparatus. Whenever in this dissemination of the irritation, the stomach becomes the part most affected, and a true gastritis forms, the brain also becomes more affected than it would have been if another viscus than the stomach had been the predominant point of irritation; it is then that it is most liable to become consecutively inflamed. This is a consequence of the close connexion which nature has established between these two viscera; and it may be affirmed that the irritations which a focus of phlegmasia transmits to the brain, rarely extend to the degree of inflammation unless they have first produced the same effect in the mucous membrane of the stomach.

PROP. CXI.

Intense irritations of all the organs are transmitted to the heart; its contractions are then quickened, the circulation accelerated, and the increased heat of the skin produces a painful sensation. This should be called fever, which is here considered in a general and abstract sense.

The same facts are here met with, which have been presented in the two preceding propositions, and we shall show their entire truth, by resorting to the same mode of reasoning already adopted. In fact, if the brain reflects the irritation in all the nerves, those of the heart must necessarily participate in it, and if they do participate in it, the heart must become more irritable, and

for the same reason contract more actively and frequently. We say more actively first, because the primary effect of an irritation transmitted to the heart is always an augmentation of the activity of the systole. This phenomenon ordinarily accompanies the contusive sensation and precedes the acceleration some time: the temperature of the skin is soon augmented; but as the skin which receives its portion of the reflected irritation has also become more sensible, and the circulation in it is not yet very active, the heart being restrained by a sort of spasm, the subtraction of the caloric is painful and determines chills, which are repeated until the systole of the heart becomes sufficiently free to propel towards the periphery a large quantity of blood, and to communicate to the skin a sufficient degree of heat to resist the impression of cold. Such is, in our opinion, the explanation of those vague and repeated chills occurring at the commencement of many phlegmasiæ; as to those which mark the access of the paroxysms of intermittent fever, and great visceral phlegmasiæ, and which are accompanied with a convulsive trembling, they differ only in degree; in fact the difference of these two kinds of chills depends principally upon that of the spasmodic irritation of the heart, and afterwards on that of the skin. In the former this irritation is moderate, and the skin receiving more blood preserves more heat, in the latter the spasmodic state of the heart is excessive, as is evinced by the smallness and tenseness of the pulse, which depends upon the violence of the irritation of the viscera; but little blood arrives at the periphery as is evinced by the paleness of the skin and the diminution of the volume of the external parts. Finally, the skin is more irritable: it is not therefore astonishing that the atmospheric air is painful to it, and the slightest subtraction of caloric produces convulsive movements; but they cease when the surface of the body has been warmed by a more free systole, and they may be also arrested by heating the atmosphere which surrounds the skin, or by placing the body in another medium of sufficiently elevated temperature.

The explanation we have just given of the mode of production of fever, proves the impossibility of forming a just idea of it, previously to being well acquainted with the play of the sympathies. Accordingly, no author has advanced any thing satisfac-

tory, respecting this worn-out subject. The ancients, who were ignorant of anatomy, considered fever as an unnatural heat, which they attributed, some to putridity or to sulphurous saline matters, others to the effervescence of spirits; the different humours were considered as each capable of producing a species of fever; subsequently it was said, that the fever was only an effect of the disease; but what is that which was called the disease? No one knew. Others considered the fever to be a salutary effort of nature, the object of which was the coction and expulsion of the morbific matter. Finally, as the existence of this matter could not be demonstrated in all cases of fever, the moderns refrained from defining fever any longer; they restricted themselves to describing it, and included in their description all the sympathetic phenomena which accompany super-excitation of the heart; but as these phenomena necessarily vary with the predominant point of irritation, they described under the name of *essential fevers*, different groups of symptoms, and none of them are applicable to the general idea of fever.

What may be said most positively respecting fever in general is, that whenever the heart, from the influence of a super-irritated organ, receives a stimulation sufficiently active to accelerate its contractions and create unusual heat, the whole splanchnic apparatus participates in the irritation, and it is reflected through the whole nervous apparatus of relation. Such is the general idea of fever; but if, after this, we attempt to ascertain which part is the most irritated, that from which the irradiations which have produced the fever originate, we enter into the particular theory of fevers, which are at present united with the inflammations.

PROP. CXII.

Fever is always the consequence of an irritation of the heart, primitive or sympathetic.

It is evident that the heart must partake with all the other organs the faculty of becoming inflamed, and diffusing the irritation through the whole visceral apparatus.

PROP. CXIII.

Every irritation, sufficiently intense to produce fever, is one of the grades of inflammation.

We hear nervous fevers, nervous pulse, fever from a moral cause, from the passions, &c. constantly spoken of. Fever may be excited by digestion, by the venereal orgasm; and it is from the possibility of these descriptions of febrile states, that many physicians found their denial of any fevers depending upon inflammation. They also adduce intermittent fevers in support of this. We will not enter at present upon the consideration of this last question, which may be more naturally treated of in the commentaries on the propositions relative to intermittent irritation; but this is the place to investigate the febrile movements, which have been exclusively attributed to the nerves.

That the nerves may quicken the contractions of the heart, they must transmit to it the irritation of some tissue; for alone, and considered isolatedly, they are only the organs of the transmission of the irritations which are developed in the economy. Supposing even, which may occur, that they were the seat of the irritation which caused the fever, this irritation would be in a point, and the rest of the nerves would serve only to transmit it. When a nerve is compressed, stretched, or torn, the irritation, which is never stationary in its chords, is at once transmitted to the brain, and is reflected by this last organ to the external sensitive apparatuses, to the muscles, and principal viscera. The contractions of the heart immediately become quicker, and as it were, convulsive; the blood is invited into the visceral mucous membranes, and by sympathy, into all the secretory organs annexed to them. The irritation establishes itself in all the organs which are in unison with the encephalic apparatus. The same phenomena take place if the irritation is developed, and attains a certain degree in some other tissue than that of the nerves. If this irritation is slight, the diseased condition that results from it, is termed erethism of the nervous state; if it is

sufficiently great to maintain for some time the acceleration of the systole of the heart, it is called nervous fever, but this fever should be considered as a slight grade of inflammation; and it is always in the brain, and in the visceral foci, among which the internal membrane of the stomach stands the first, that this grade is seated; augmentation of contractility, determination of blood, and tumefaction, from which a painful feeling results, always exist there. But how is it that such a grade of irritation does not become elevated to a higher degree? it is owing to the predisposition of the individual. Suppose him to be very vigorous, in a state of perfect equilibrium, and neither sanguineous, nor with a disposition to acute inflammation, the disturbance will in a shorter or longer time cease; but if he has a tendency to contract an intense phlegmasia, if he is already affected with a more or less circumscribed chronic one, acute inflammation will take place, and the fever will be prolonged with proportional intensity. It is thus that moral affections, passions, laborious digestion, and even wounds and ligatures of nerves, become the cause of the most intense and obstinate continued fevers. I now ask, where is the line of demarcation which separates these two kinds of fevers? how can they be known at their very commencement? On this point we can obtain only presumptive evidence. The habitude, and the idiosyncrasy, will furnish it to us in some persons who are subject to what are called *nervous fevers*. However, examine closely these kind of subjects, and you will not be slow, with the assistance of the lights of physiological medicine, to discover that they have an internal focus of chronic phlegmasia, most frequently in the digestive apparatus, sometimes in the lungs, more rarely in the encephalon, and sooner or later these febrile movements, which you term nervous, because they disappear as if spontaneously in a few hours, will become prolonged, and converted into continued fevers, always of a very severe grade. But how are we to be certain that the febrile movement now under consideration, is not that which should take this fatal aspect? It is then only after it is too late, *a posteriori*, or by the event, that you judge of the nervous character of the fever. Such are the facts which have engaged the author to advance, that every irritation

sufficiently intense to produce fever, should be considered as a grade of inflammation. It is seen how false and inconvenient these denominations of *nervous, and slow nervous fevers* are, applied to diseases of long continuance, which most frequently terminate fatally, and following which, evident traces of phlegmasia are found in the principal organs, and particularly in the brain and digestive organs.

PROP. CXIV.

Every inflammation sufficiently intense to produce fever on being transmitted to the heart, is sufficiently so to be at the same time transmitted to the brain and the stomach, at least at its commencement, and as the nature of inflammation is not changed by its transmission, it is always a grade of inflammation which it developes in these three organs.

This reading is faulty; it should be:—*Every inflammation sufficiently intense to produce fever by exciting the heart, is sufficiently so to act at the same time upon the brain and stomach, at least at its commencement; and as irritation does not change its nature by being transmitted, that which these three organs then receives is always a grade of inflammation.*—Such is the form which this proposition should have.

We have already demonstrated that it is through the medium of the brain that the heart and stomach receive the irritation from a focus of inflammation developed elsewhere than in these three organs; therefore we need not recur to the first part of this proposition, and the second only remains to be considered, in which it is stated, that transmitted irritation is similar to the original one; in other words, that it is a grade of inflammation. This assertion is one of those which have appeared most paradoxical to persons who have not sufficiently reflected on the physiological doctrine, or who at least have not borne in mind all the facts upon which this doctrine is built. Well, we will proceed to relate these facts, as far as relates to the question now under consideration.

If we examine the tissues visible externally, which are most affected by inflammation, we observe, when they are not modified by revulsion, an augmentation of the contractility and sensibility, sanguineous engorgement, and tumefaction of these parts. Thus, in gastritis, the tongue becomes red, its mucous membrane is injected and tumefied with the follicles which become prominent. The muscles of this organ experience a state of contraction, the whole interior of the mouth is heated, even at the time when there is no fever. It is the same with the conjunctiva. The skin participates in this state; often even the most affected parts of this membrane are in an erythematous state or present true inflammatory pimples, so that it may be confidently said that there are morbid erections in all the tissues, which nearly exhibit that of the internal membrane of the stomach. If attention is now directed to the organs situated beneath the skin, it will be discovered that such of them as receive a sympathetic influence from the interior focus of irritation, are in a nearly analogous state; the muscles which are rendered painful by gastritis, are at the same time more heated than in the normal state; the articulations modified by a special sympathy, are warmer, have increased sensibility, and are often slighly swollen. If leeches or cups are applied at the same time to the parts of the skin in which these sympathies manifest themselves, and to other parts of the same surface, a greater quantity of brighter coloured, and warmer blood will be obtained from the former than from the latter.

Let us now apply all this to the other foci of inflammation. Since gastritis produces in the openings of the mucous membranes, in the skin, in the muscles, and in the articulations, which it influences, a slight grade of inflammation, it is natural to believe, that when the inflammation, primitively developed in these tissues, sympathetically reäcts upon the stomach, it equally produces in this latter organ a more or less decidedly marked grade of the same phenomenon. There is the greater reason to admit this reciprocity, since the stomach, when influenced by glossitis, angina, ophthalmia, erysipelas, anthrax, or arthritis, offers the same phenomena and developes the same sympathies as if it were affected with a primitive inflammation.

Consequently, loss of appetite, redness and foulness of the tongue, injection of the conjunctiva, contusive pains in the locomotive apparatus, which are developed as the effect of one of those phlegmasiæ, and which are termed gastric embarrassment, can depend only upon a grade of inflammation of the stomach, which corresponds, like sympathy, to the inflammation of the external parts. If the correctness of this reasoning, as relates to the tissues we have placed in relation, is admitted, we do not see why this reasoning should be less accurate when applied to other tissues. Thus the rubeolous, variolous, and scarlatinous inflammations of the skin can be only sympathies of gastro-enteritis, of angina, and of bronchitis, by which these diseases have commenced; thus also the cough which depends on gastritis is a sympathetic bronchitis, as the gastric embarrassment excited by bronchitis is a sympathetic gastritis; for the same reason, when the secretory organs, such as the kidneys, the liver, and the salivary glands, furnish, in the phlegmasiæ of different organs, either a more abundant or thicker, or a depraved and very irritating secretion, we must believe that the sympathetic influence which deranges their action, depends upon an augmentation of heat and sanguineous injection, on a morbid vital erection analogous to that of the viscus from which this influence radiated, in a word, on a true grade of inflammation. Pain and tumefaction are not, it is true, always perceptible, but they are so sometimes. In the phlegmasiæ of the great viscera, heat and a sensation of fulness exist, in most cases, in the region of the liver and that of the kidneys; and when the patient does not complain of them, it is always because his attention is fixed upon the primitive focus of inflammation, or upon other organs more sensible than the secretory, and which have equally received the sympathetic influence of the viscus primitively affected.

Examine now the heart. What is its real state in the midst of this disorder of the principal functions? It contracts more frequently and actively than common. It has then more intense vital erections; it is consequently more heated and more injected, and its proper tissue more tumefied than previously; the modification which it experiences is therefore also a grade of in-

flammation, that is, a repetition of the phenomenon which occur in the viscus primarily affected.

If this be not strict inductive reasoning, we know not what can be so in pathology. But this is not all, we must also examine into the state of the brain.

Since it is through the intervention of this organ that the irritation of the primitive focus of the phlegmasia is reflected upon the different sympathizing tissues, we must be satisfied that this irritation must act upon the brain in a perfectly analogous manner. The irritation then invites a flow of blood into the substance of that organ, and an increase of its temperature and density; and as to the pain, it is so marked in the commencement of most of the phlegmasiæ of the slightest intensity, that its absence would suffice to invalidate the inflammatory character of the cerebral irritation. But we go further; we venture to maintain that the encephalon is always more or less painful in these diseases. If lancinating and throbbing pains are not felt in it, at least there is constantly experienced in it a sensation of confusion, of fullness, of dizziness, in short, something which positively indicates a state of congestive irritation.

It results from this rapid examination of the principal sympathies of inflammation, that almost all the eminently sensible, irritable, and sanguineous organs partake of the vital morbid erection of the primitively affected part, so that the inflammation which has originated in one part of the body, is quickly disseminated in different degrees in many others, but principally in the brain, heart, and stomach, as is stated in the proposition now under consideration. All this will not surprise physicians who have deeply meditated on the physiology of the normal state; they will be sensible that the principal viscera being united by intimate connexions, by means of the eighth pair of nerves and the nervous apparatus of the great sympathetic, and always acting in concert in respiration, digestion, excretion, the moral and affective faculties, it is utterly impossible that any of them should be affected with an irritation of the slightest degree of intensity without the others participating in it, and that the same lesion should not be common to them all. The duty of the physician

in these cases is to determine which is the starting point of the irritation, in order to determine whether it continues the predominant one, and in the contrary case to ascertain in which part it may be most advantageously attacked. But this last having been considered when treating of the sympathies, we need only refer those readers to it who are desirous of increasing the connexions, and seizing the true spirit of our doctrine.

We say nothing of the tissues whose action is diminished by the inflammation, for it is clear that their apathy is the effect of a revulsive abstraction of vitality.

PROP. CXV.

Irritations transmitted to the brain and stomach by an inflamed organ, sometimes diminish, notwithstanding the persistence of the inflammation which has produced them, and these two viscera, (the brain and stomach,) resume their functions, whilst the heart continues to be very much irritated, and to keep up the fever.

We can attribute this change only to habit. Fevers divide themselves in this respect into three series; in the first, the inflammation which maintains the febrile state is so greatly aggravated in the principal viscera, that it destroys life; in the second, the inflammation abates, and with it the sympathetic irritations of all the organs disappear; the third consists of the cases in which the inflammation persists and becomes chronic, always, however, preserving sufficient activity to continue to act upon the heart. It is these last fevers which are referred to in the present proposition: they are in general designated by the term hectic. As soon as a person affected with a violent febrile disease, which had for some time suspended the principal functions, recovers his appetite, and thinks to return to his business, although he has still frequency of pulse and heat of skin, his physician says that the acute disease is degenerated into chronic, and he gives to the fever the term hectic. These fevers, which may moreover appear primitive, are always kept up by a circumscribed

inflammation to which the economy is insensibly habituated, but always, however, to a certain point only. In fact, the sympathies which appear lessened during one part of the day, are increased at certain periods, especially in the evening, and after meals, and a person who saw the patient during these exacerbations, would believe him to be affected with an ordinary acute fever. There is then only a momentary diminution in the play of the sympathies; but what is very remarkable is, that that of the heart is the most constant. Whilst the moral faculties recover their liberty, locomotion is reëstablished, and the stomach recovers its digestive powers, and the heat continues to beat with rapidity, as being the most faithful interpreter of the persistent irritation. However, if we would enter into the details of cases of this kind, we should find that all the foci of inflammation do not act with the same force upon this organ; those of the lungs appear most apt to keep up the frequency of the pulse; moreover, most hectic fevers depend upon inflammation of this viscus, and it is not uncommon to see fevers which, after having been excited and kept up for some time by inflammations of other organs, are prolonged to a chronic state by the consecutive development of a pneumonia which becomes chronic, and insensibly induces pulmonary phthisis. But as these details appertain to pulmonic inflammations, we leave them to examine, following the order of our propositions, what occurs in the viscera which appear least affected during the continuance of hectic fevers.

PROP. CXVI.

Although the brain and stomach continue their functions during inflammation of other organs, they are nevertheless organically irritated. Their irritation always borders on inflammation, and is very often exalted to this state, if the original focus, which keeps it up, continues till death.

This proposition is only an application of another more general one, announcing that no person can die unless organs of

the first order are affected. In the ancient systems of medicine, there were grouped around the symptoms produced by the inflammation of a secondary organ, those which depended upon the affection of fundamental viscera, and of the whole, an entity was made which took the name of the organ primitively affected.

Cast a glance over the histories, in the classic writers, of chronic laryngites, designated by the name of laryngeal phthisis; you will find towards the close of the disease the united symptoms of chronic pneumonia and gastro-enteritis. It was the same in the histories of visceral, renal and hepatic phthises. Those who described the course and termination of extensive external wounds, of complicated fractures, &c. spoke of hectic fevers, of cough, of colliquative diarrhœas, as so many attributes of the external disease. Physiological medicine has given the clue of this labyrinth, in teaching that, in all cases, irritation extends by means of the sympathies, from the exterior to the interior of the organs subsidiary to those of the first order and that death cannot take place until the inflammation has deeply affected these last. This doctrine has demonstrated that the secondary irritations of the principal viscera do not in any respect differ from their primary irritations, and it has thus simplified semiosis and afforded a solid basis for therapeutics. But if the external organs and those of a medium importance cannot long suffer without the irritation being communicated to the great viscera, much more must these last reciprocally transmit irritation to one another. Thus chronic pneumonia, which seems to agitate the heart without implicating either the digestive organs or the brain, nevertheless, incessantly irritates them, and if its progress is not interrupted, ultimately developes in them consecutive phlegmasiæ, which are always the signal of destruction. Such are the facts indicated in proposition CXVI, and we think that it is needless to dwell longer on it.

PROP. CXVII.

If the irritation excited by sympathy in the stomach and brain, instead of diminishing, becomes more intense than that of the organical focus, upon which it depends, it is

one of the cases alluded to in the propositions on metastases. (Vide Prop. CII. et. seq.)

We might in fact content ourselves with this reference; but since we are upon the subject of the displacement of irritation and of its successive predominance in different organs, we will speak of the fever termed *traumatic*. For a long period, and even down to our own time, this fever was regarded as a necessary phenomenon and effect of extensive wounds. In the year 1814 we taught that it depended on gastro-enteritis excited by the inflammation of the wound. Since that period one of our earliest pupils, Dr. Treille, has made the same assertion in a memoir inserted in the *Annales de la Medecine Physiologique;* and to demonstrate its entire truth, he has related seven cases of amputation of the limbs and breasts, in which he effected complete cicatrization without the patients having experienced any febrile movement. These facts at first produced considerable surprise in many persons, but they have been neglected by those who do not pride themselves on keeping pace with the progress of the science. We have continued to repeat in our lessons, that by circumscribing the inflammation within the limits of the wound, traumatic fever may almost always be prevented. Other disciples of the doctrine have also proclaimed this truth; it has become one of the fundamental axioms of French surgery, and none but the *immoveables* now maintain that this fever is a necessary phenomenon, a disease, as they say, purely surgical. We have also proved that surgeons commit a gross error, in attributing bilious, putrid, and malignant fevers to a humoral principle independent of the external lesion. We showed that these fevers are nothing but the traumatic fever itself, become more internal either from the disposition of the subject or from bad treatment. Our inference was that by calming this disposition, these fevers might be prevented and those disastrous epidemics which destroy so many of the wounded, in military hospitals, after severe battles, and in all cases where surgeons have been compelled to perform many operations, be obviated. Experience has since justified all those assertions, the substance of which is contained in the proposition we have just commented on.

PROP. CXVIII.

Inflammation of the encephalon *always* produces in its train, inflammation of the alimentary passages, and *sometimes* that of their appendages: this is an organic sympathy.

The attention of the reader is now called to the phlegmasiæ of the brain in particular. This comprises the important subject of abscesses of the liver, following wounds of the head. These abscesses, which are true phlegmons, have been attributed to various causes. They have been successively ascribed to a particular sympathy of the brain, with the secretory organ of the bile—to the impediment to the return of the blood from the hepatic veins to the heart, produced by the shock to the brain, which diminishes the frequency of the pulsations of this organ—finally, to the shock given to the liver itself; for it is said, hepatitis is met with only in individuals who have had a fall at the moment of the concussion, and who, consequently, have experienced a contusion in the region of the liver. This pretended proof is completely overturned by the fact of cases having occurred, in which hepatitis with abscesses supervened, although the patients, when they received the blow on the cranium, were seated or lying down. The physiological doctrine removes this difficulty, by showing, from repeated observations, that the inflammations of the brain of any intensity, develope, in all patients, irritation in the mucous membrane of the stomach, and that this irritation is necessarily repeated in the liver, whence results a super-secretion of bile. The natural conclusion from these facts necessarily is, that in some individuals, and these are always the least numerous, irritation of the liver may be exasperated to the degree of phlegmon. It remains to ascertain why traumatic phlegmasia of the brain acts more frequently than the spontaneous, as the exciting cause of purulent hepatitis; but if we reflect that these last are sometimes induced by spontaneous encephalitis, as we have more than once seen, and that always in these cases, as

in those of wounds of the brain, gastritis precedes the hepatitis, we will perceive that this difficulty does not destroy the fact of the transmission of the irritation from the encephalon to the gastric passages, and from the latter to the liver; it will particularly be perceived, and it is the most important point, that our explanation furnishes the best means of preventing these so dreaded abscesses, by attacking the inflammation, not only as was formerly done, by general bleedings, but by local bleedings over the digestive organs, from the moment in which the first symptoms of the communicated irritation are perceived.

PROP. CXIX.

Inflammation of the encephalon is more frequently the *sympathetic effect* of inflammations of the stomach, than their cause.

In fact, most of the phlegmasiæ of the encephalon are preceded and excited by gastritis, as may be observed by watching, from their commencement to their termination, acute fevers of an ataxic character. The cases in which inflammation is developed in the brain, without being preceded by gastritis are, commonly, the following:—When the head has been contused, wounded, or exposed to the influence of great heat; when intense inflammation exists in the vicinity of the brain, for example, in the teguments of the cranium of the face, or in the parotids; when the patients have experienced moral affections, and when they have devoted themselves to too intense and too prolonged intellectual labours. However, it is not uncommon for these different causes, with the exception of the traumatic, to act at the same time upon the gastric passages, and even to inflame them before producing encephalitis. It is thus, that erysipelas of the face, parotiditis, and moral affections, derange digestion and redden the tongue, before the concomitant irritation of the brain reaches the degree which constitutes inflammation, although this organ is itself intermediate between the parts primarily affected and the stomach, between the external senses, which have fur-

nished the materials of the moral affection and this same stomach, that is to say, that, although the brain is irritated by the morbid vital erection of another organ, it is often necessary for the former to experience the reäction of the gastritis, which it has itself excited, in order to reach the degree of irritation corresponding to inflammation. So true is it, that the cerebral tissue is one of those which is least disposed to take on true inflammation! So great is the influence upon the centre of relation of the organ which makes it sensible of the imperious wants of nutrition!

PROP. CXX.

Sanguineous congestion of the stomach in drunkenness, in typhus, in *fevers mali moris*, &c. is necessarily repeated in the brain and its membranes.

The correspondence between the mucous membrane of the stomach and the brain, is such, that the modifications of that membrane may appear to be those of the brain itself. Whatever cools the stomach, diminishes the excitement of the brain, and *vice versa*. But as this viscus reäcts with the same promptitude upon the nerves of the limbs, the sensation of health and of indisposition, which is supposed to be felt in the whole body, seem to immediately arise from the stomach. It is the extreme promptness of these sympathetic relations, that has so long deceived physicians respecting the true mode of action of *ingesta;* and which has made them forget that medicaments cannot act upon the different parts of the body, except by modifying the stomach. Thus the influence of alcohol upon this viscus has long been forgotten, to consider only the impression which it makes upon the brain and nerves.

The same error was committed relative to antispasmodics. Nevertheless, it is sufficient to examine it only for a few moments, to satisfy oneself, that if the tongue, the eyes, and the face become red in drunkenness, it is because the internal surface of the stomach has first experienced this modification; and that the sanguineous engorgement of the brain, manifested

by the pain and sensation of fulness in the head, by the heaviness of the limbs, by the stammering and tendency to sleep, are the effect of the engorgement of the stomach. Can a similar modification following the ingestion of opium be misunderstood; and is it not certain that the heart and whole arterial and venous system participates in the sanguineous turgescence of the stomach? An officer, accustomed to take daily as much as two drachms of opium, to relieve an uneasiness which he believed to be nervous, died in the hospital of Val-de-Grace, in September, 1825. On post mortem examination, gastritis was observed, the mucous membrane of the stomach was of a deep brownish-red colour, and there was great enlargement of all the epigastric vessels. The lining membrane of the cavities of the heart was of a very bright red, that of the pulmonary veins brown, and the aorta exhibited various shades of inflammation, from a bright red to a black colour, with numerous ulcers of different sizes. Let us see how that kind of stupor, that state resembling drunkenness, which occurs in the most violent acute gastro-enteritis and miasmatic typhoid fevers, is to be explained. The irritated mucous membrane of the stomach is first engorged; this is quickly repeated in the brain; it is then surely not surprising that this viscus becomes actually inflamed, unless art or nature destroys the irritation by weakening it, by bleeding, or other sedative means, or by displacing it by a fortunate revulsion.

PROP. CXXI.

Inflammation of the encephalon excites nervous phenomena, which have been frequently considered as essential or idiopathic affections.

Formerly nervous phenomena, such as delirium, convulsions, and unusual sensations, were attributed to inflammation of the brain, only in cases where they were accompanied with pains in the head, bright redness of the face, and violent pulsation in the arteries of the head. These being absent, the symptoms termed nervous were attributed sometimes to an inappreciable modification of the brain, sometimes to that of the trunk and

branches of the nerves. These errors were committed in chronic diseases as well as in acute. In the latter, the nervous phenomena were often attributed to the deceitful character of the fever, because, on examination after death of individuals who had been supposed to be affected with inflammation of the brain, no trace of inflammation in this viscus was discovered. In chronic affections, in which true suppuration was still more rarely found, there was even more vagueness and uncertainty. As many morbid entities were made as the nervous symptoms could present differences of forms. Thus there were the entities cephalalgia, hemicrania, vertigo, stupor, insanity, convulsions, tetanus, catalepsy, rush of blood, *(coup de sang,)* apoplexy, &c. &c. and each of them seems to be of an entirely distinct nature. The physiological physicians have forever destroyed all these fantastic entities, and demonstrated that they are only the different effects of a constantly identical phenomenon, irritation of the brain or spinal marrow, and that this irritation may sometimes be elevated to a degree corresponding to inflammation. It is with individuals, as regards the brain, the same as respects other organs; one person may suffer from very alarming nervous phenomena, although he has but a very moderate irritation of the brain; another will have his functions of relation but little excited, and will exhibit scarcely sensible nervous phenomena, although in him the brain or its membranes may be actually in a state which leads to suppuration. Some who have had symptoms corresponding to irritation and congestion, when suppuration, softening, or hæmorrhage shall have resulted from it—stupor, idiocy, or paralysis, and finally apoplexy, will become the symptom of the organic alteration; whilst, in other cases, these symptoms correspond only to an engorgement without derangement of disorganization, and may be cured by an appropriate treatment. Such are the well-established facts at present, which have served as the basis of the proposition now under consideration. But it must be observed, that in stating that inflammation of the brain may often excite nervous phenomena, which have been taken for essential, it is not asserted that these phenomena are the constant symptoms of inflammation of this apparatus.

PROP. CXXII.

All prolonged irritations of the encephalon terminate by inflammation, or hæmorrhage: such are epilepsy, catalepsy, and excessive mental perturbations.

This refers only to irritations of the brain, which are the principal diseases, and which themselves produce death; for it is evident that a person affected with a chronic irritation of the brain may succomb from the affection of another viscus, before that of the brain has arrived at its last period. But it is always certain that the latter tends to disorganization, and that if its progress be not impeded, it will arrive at it. This proposition seems to us to require the following correction:

All prolonged inflammations of the encephalon terminate by inflammation, sub-inflammation, or hæmorrhage, when their progress is not interrupted either by art or by the affection of some other organ; and in these cases they always terminate by death; such are, &c.

PROP. CXXIII.

Mania always supposes an irritation of the brain: this irritation may be long kept up there by inflammation in another organ and disappear with the cessation of that inflammation; but if it be prolonged, it always terminates by a conversion into true encephalitis, either parenchymatous or membranous.

It is from not having constantly found suppuration in the brain, or in its membranes, that physicians have hesitated so long in referring insanity to its true cause. Physiological medicine can alone rectify the ideas on this point, by showing that an organ may suffer a high degree of irritation for a long time without

furnishing a purulent secretion; or in other terms, suppuration is only one of the numerous modes of irritation of our organs. We shall not here advert to all the anatomico-pathological facts which would establish this truth, we will content ourselves with making an application of them to the brain, in the disease in question.

The centre of all the stimulations received by the economy, the brain may contract irritation either in an acute or a chronic form; and this may predominate in the different regions of this viscus. The opinion of many physicians at present, is that the inflammation of the periphery, in the superior part of the hemispheres, is the cause of insanity. But this inflammation may exist there in a more or less violent, or a more or less acute form. In its highest grade, this phlegmasia does not receive the name of insanity. The physicians in question only give this name to chronic arachnitis. But in supposing that the delirium was a constant symptom of this phlegmasia, which we do not admit, what is the difference between the delirium of an acute fever and that which, without being accompanied with fever, appears with different symptoms of excitation, in the functions of relation and in those which more particularly preside over nutrition? This difference is only in degree. In both grades, suppuration may exist or be wanting on the surface of the arachnoid and in the pia mater; in both the irritation exists simultaneously in the mucous membrane of the stomach and small intestines, finally, in both cases, the patient may die, sometimes from the effects of the irritation of the brain, at others from those of the gastro-enteritis, without speaking of the complications that may supervene, that is, of the development of the inflammation in another organ. The principal difference between the delirium which they do not term insanity, and that which has received this title, is to be drawn from the duration of the irritation of the brain. When it is acute and terminates either in a cure or in death, the disease does not assume the name of insanity: when it is chronic, the disease receives and preserves this appellation. The mania of authors is then in fact only *permanent irritation of the brain with delirium.*

This is very well, and the difference would be sufficiently defined to serve as a basis to nosologists, if chronic irritation of

the brain always produced delirium; but what degree of it is necessary, that this should be the invariable result!

We have several times observed, and indeed recently in a patient who was dear to us, arachnitis last for a long time, and cause death without delirium having existed. Instead of this mental exaltation which constitutes the maniacal delirium according to authors, we often observe only more or less obtuse cephalalgias, difficulty of walking, confusion of ideas, weakness and loss of memory, finally, the gradual obliteration of the intellectual and locomotive faculties.

If we adhered to the theory of those who insist that mania is a chronic phlegmasia of the arachnoid, where would then the anatomical characters of that disease be found? For ourselves, we think that chronic irritation of the brain being admitted, it results, that in some individuals there would be symptoms which correspond to the mania or insanity of authors, and in others, a mode of lesion of the faculties of relation, which rather consists in debility than exaltation, and this difference appears to us entirely subordinate to the degree of irritation, and to the idiosyncrasy, that is, to the peculiar mode of the irritability and sensibility of the patients.

But is it quite certain that the maniacal delirium is only dependent on the irritation of the periphery of the brain? It may at least be doubted, when the post mortem examinations of some insane persons manifested no more alteration in this part than in the other regions of the brain. Delirium, whether acute or chronic, appertains to a vicious mode of the irritability of the brain, and this mode may depend sometimes on irritability of the periphery, in which the membranes more or less participate, sometimes on that of another part. We find cases of insanity consequent on epilepsies, paralyses, and apoplexies, which only present after death, partial disorders, confined to one point of the hemispheres; at other times the insanity is kept up by a chronic gastritis, or by a metritis, and lasts as long as these diseases. Insanity is sometimes the result of an opposite cause, of a moral affection, which, in this case, as in those where it depends on another viscus, has exalted and depraved the irritability of the

brain, without producing a permanent congestion. If it were otherwise, would we see it dissipated by another moral affection, or by a concussion of the head! A physician, whose candour and veracity are known, mentioned to us, that a woman, whose menses were suppressed, having determined to drown herself, went to St. Cloud for that purpose. As she was on the point of throwing herself into the river, the menstrual discharge took place copiously, and the melancholy ideas which filled her mind were immediately dissipated, and she returned home full of joy and hope. A man was deranged for more than a year; nothing could arouse him from the state of stupidity in which he was plunged. Finding himself in the country, he heard the noise made by some robbers who had broken into the house, and the cries of his brother, who they were on the point of assassinating; his insanity instantly disappeared, he ran to the aid of his brother, and from that time his reason has suffered no derangement. We might multiply examples of these kinds of cures, and add to them those of intermittent insanity, and of those which depend for some hours on accidental moral impressions. It results from this, we think, that the cerebral irritation which produces insanity, may be either transient or permanent; that when it is transient, it may recur a great number of times, without occasioning either suppuration or remarkable thickening, and especially that it does not solely consist in a disorganizing inflammation of the serous membrane of the brain. That inflammation of this viscus and its membranes sometimes, and even often exists, is without doubt; but that it constantly takes place, and that the same seat can always be assigned to it, is what we dare to deny with the certainty of obtaining the sanction of all physicians, whom long practice has rendered competent to decide on such a matter.

But those who have not sufficiently reflected on it will reply to us, you abandon then your favourite theory? Have you not said elsewhere, that the delirium of maniacs does not differ from that of persons attacked with acute encephalitis, except in degree? Yes, certainly we have said it, and we again repeat it: delirium, in our opinion, is always the proof of an irritation of the brain, and we have

proved quite recently, in dilating on different propositions, that all the morbid vital erections, capable of agitating the heart and of awakening the sympathies, in acting on the principal organs, are grades of inflammation; but we have also said, that all inflammations do not produce suppuration, &c. But the kind of inflammation which gives rise to symptoms of insanity, may present all these varieties; at its commencement it excites the heart and muscular apparatus, it exalts the phenomenon of colorification; it depraves several secretions; it produces concentrations of action in certain organs, at the expense of the vitality of several others; and the stomach, when it is not the primary cause of it, always receives from this grade of phlegmasia, a strongly-marked irritating influence. If at last these phenomena disappear, without the reason being reëstablished, the modification of the brain which gave rise to them has not changed its nature; this is still a morbid vital erection; it constantly keeps up some phenomena of irritation, and at certain epochs, we see it recover its first activity, and again induce the same sympathetic irritations as at its commencement, but it may, notwithstanding this activity, be not sufficiently intense to produce appreciable disorganizations, and limit itself to a more or less considerable sanguineous congestion, the inevitable consequence of too frequently repeated vital erections. The nervo-sanguineous expansions of membranes of relation furnish tolerably numerous proofs of this.

If it is true that irritability and sensibility are vitiated in the skin, in the organs of the external senses, in the same visceral mucous surfaces, which we have proved to be internal senses, and in the secretory apparatuses associated with the functions of these membranes, without the irritation which is seated in them having any tendency to suppuration, and without its producing appreciable disorganizations; if the muscles can contract a convulsive mobility, which no longer permits the will to direct them at the instance of the intelligent principle, without their nerves having suppurated, or been disorganized, we do not see why the portion of the cerebral substance which presides over the intellectual phenomena, should not be susceptible of a similar kind of lesion; why it might not, after death, present no other change than a

sanguineous injection, or even show no trace of it, when a new irritation may have attracted the blood towards another organ some time before death.

These kind of losses of colour in old foci of phlegmasiæ by the appearance of new points of irritation, are not rare in pathological anatomy; there is not a body that does not present several examples of it after diseases of long duration. It may be concluded, it appears to us, from what has been said, and from many other facts which we have not related, that an excess of mobility in the encephalic nervous apparatuses, may produce delirium, as the want of this mobility sometimes becomes the cause of stupor and idiocy; that this mobility may depend on the affection of all, of one, or several regions of this apparatus; that this mobility may equally have its exciting cause in the brain, and in the viscera which sympathize most closely with it; that, in the brain, the irritation may in some tend to suppuration, in others, be limited to the production of a sanguineous engorgement, a suppuration, or even a sub-inflammation, or finally, a simple serous exhalation; that, in individuals differently constituted or predisposed, the most inflammatory irritations of the brain produce delirium with difficulty, even in the acute state, as is attested by undeniable proofs; and that in these same subjects, chronic irritations do not occasion it, but limit themselves to hindering the exercise of thought, to successively destroying the different moral faculties, as attention, memory, the aptitude to receive and make use of certain impressions received through certain senses, and to weakening in a greater or less degree the faculty of locomotion.

As regards stupidity and idiocy, it is also certain, we think, that these lesions, as well as paralysis, may be a product of the sanguineous inflammation still existing, which keeps up too considerable an engorgement, or else a consequence of an already extinguished sanguineous irritation, but which has left in its place a sub-inflammatory engorgement, a softening, a suppuration, or an accumulation of sanguineous or serous fluids.

It is seen that we make all these lesions subordinate to irritation, and that, therefore, we have not abandoned our theory, or ceased to be consistent with ourselves.

We have stated, that the aptitude to contract delirium de-

pended on irritability of the brain. In fact, the differences which exist between individuals in this respect, are infinite, and no one can judge by himself of the moral irritability of another. Impressions are then felt by each individual in different degrees. Those in whom they are slight will never become insane. But a moderate degree of this irritability is not the only condition that preserves us from mental alienation; we may feel deeply, and not be subject to delirium; a force of equalizing reäction exists in us which opposes all the possible causes of excitation. But this varies in the different visceral foci. One does not reäct with sufficient vigour to preserve the equilibrium in the gastric passages, and in the lungs, after a violent impression of particular modifiers on these organs, but which will readily restore the just measure of action after having experienced a strong moral shock. Another, which yields almost without resistance to the influence of the passions, possesses an equalizing power in the viscera of the inferior cavities, which protects it from inflammatory congestions and nervous affections of these viscera.

To what external signs shall we recur to verify the predisposition to delirium? We are tempted at first to found it on the vivacity of the sensations, afterwards on the small volume of the anterior region of the hemispheres which correspond to the frontal bone and the eyes, a region which is constantly found developed in proportion to the intelligence. This last vice of organization constitutes, in fact, a predisposition when it is joined to the former; for then the lateral and posterior parts of the brain, which, according to craniologists, are appropriated to the instinctive phenomena, become predominant, and determine the triumph of the instinct over the intellectual faculties in all cases of tolerably violent irritation.

This explanation is certainly something gained, but an exclusive importance must not be allowed to it. If lunatic asylums presents many patients with contracted and low foreheads, they also exhibit some endowed with the finest conformation; and on the other hand, families with badly developed foreheads do not always furnish examples of mental alienation. It is then the mode of vitality that plays the principal part in the predisposition under consideration. From these data, may we not lay

down the following propositions, which are allied to what has been said on the passions and intellectual faculties in the *Treatise on Physiology applied to Pathology?*

Delirium is always owing to irritation of the brain, but a certain development of that portion of this viscus which presides over the intellectual faculties, renders it of less difficult occurrence. The recuperative organs, and those of digestion, exercising, in the normal state, a very great influence on the intelligence, as destined to provoke very important instinctive acts, in which the will must concur, are also those which, in a state of morbid irritation, have the most power in depraving the reason. Now, if the portion of the brain on which this faculty depends is naturally weak, from its imperfect development, it is clear that the irritation of these viscera will suspend or abolish it with greater ease.

The most complete development of the intellectual portion of the brain does not protect against phlegmasiæ of the highest degree occurring in the great apparatuses, as is proved by all very intense gastro-enterites, &c. When these phlegmasiæ exist only in grades compatible with chronicity, this fortunate development will preserve those individuals from insanity, in whom nervous irritability is not excessive; but it will not prevent it in those where this irritability exists; that is, a moderate phlegmasia will cause in these latter the same consequences as an inflammation of the highest degree of intensity will produce in other individuals indiscriminately. We even think that we may go further, and affirm, that a very great development of the intellectual part of the brain, united to its extreme irritability, thus producing the highest degree possible of the moral faculties, constitutes a real disposition to insanity. What is very certain, is that an excess of intelligence, of a facility of comprehending every thing, or drawing inferences from every species of propositions, expose the individual, even in the normal state, to errors of judgment, as if the human intelligence was condemned to never exceed certain limits. We have elsewhere said, that men who think too much, who enjoy to a certain degree the faculty of self-examination, of carrying analysis to its highest pitch, have a prodigious tendency to abstraction, are not understood by reasonable per-

sons, or ultimately find no motive for action, and are vacillating, uncertain, and even sceptical, to a degree which shocks the generality of mankind, thus rendering their conduct ridiculous and puerile. Now, we think that such an organization is also a predisposition to insanity, because it supposes, in a brain greatly developed in an intellectual respect, an irritability which has a tendency to exceed the limits of the normal state.

Children are less exposed to insanity than adults. Can a reason for this phenomenon be given? Should not their excessive irritability render them very subject to mental alienations? certainly; but other reasons must also preserve them from it to a certain point: in fact, their faculty of thinking being imperfectly developed, their moral impressions are less profound than those of adults. As children reflect but little, pains and pleasures affect them much less than adults; they cannot elevate the vital action of the intellectual part of their brain to so high a degree, and for the same reason they cannot deprave it as readily.

This explanation is very satisfactory, some one will say, when he attempts to explain the moral causes of insanity, but is it equally applicable to physical causes? Why does chronic gastritis, so common among children, produce fewer cases of insanity than among adults?

In our opinion, this may depend on the cause already stated; for if their moral faculties are less formed than those of adults, they must necessarily be less exposed to deteriorate from the sympathetic influence of another organ.

We do not know how far this explanation will be found plausible; but it appears to us that the parts which act less in each period of life are also least exposed to super-irritations. Now, if this be applied to the brain, it will be found that the part which predominates in infants is that which presides over the instinct, and experience will demonstrate that the instinct never fails to acquire a vicious predominance in all the irritative diseases of childhood. As soon as a child experiences an acute phlegmasia, he becomes the slave of his wants; he rejects every thing that displeases him, and seeks every thing that is grateful to him, and becomes insensible to the counsels of reason. This is his kind of delirium, and he preserves it as long as the disease with which he is affected lasts. If he

does not commit as many extravagancies as the adult, it is only because he has fewer ideas and fewer materials in his memory.

But, will it be said, he very readily becomes delirious in acute diseases; why does not the same take place in chronic? We will reply, that the delirium of infants in the cradle, attacked with acute diseases, is not perceptible, and that as soon as they are sick, they become wholly instinctive; that the delirium of infants who begin to speak, is limited to a small number of objects, and that their instinct is more affected than their intellectual faculties; finally, that if children near puberty become delirious in their acute diseases, they may do the same in chronic, but at the same time much less so than adults. It is always the instinct which suffers most in these two grades of irritation, and which from its extreme predominance, dissipates or obscures the degree of reason that may have been developed. The proportion of the influence of irritative diseases on the intelligence appears to us exactly the same in the acute and chronic diseases of this age.

If women are more exposed to insanity than men, it is readily explainable by the extreme irritability of their sensitive system, which renders their imagination predominant over their judgment; added to which, that in general, the portion of the encephalic apparatus that plays the greatest part in the faculties of intelligence is less developed in them, than that which presides over instinct. All the results of such an organization will be appreciated, if what has been said in a general manner on this question be recalled to mind.

Women, like children, are more instinctive in their irritative diseases. After children, they present us with the most multiplied examples of caprices and indocility in diseases. It would be superfluous, it appears to us, to dwell longer on this subject; but it may be useful to anticipate an objection that may be made in relation to what we have said on the predisposition depending on the conformation of the brain.

We have stated that a feeble development of the intellectual part of the brain, favours insanity in adults, and renders it less likely in children. Are these two propositions contradictory? Certainly not, and for this reason; however small the development of the intellectual portion of the brain may appear in adults

whenever they are sane, it is sufficient to afford them many ideas, many materials in the memory; it is then always sufficient to make them feel moral impressions vividly, and to strongly excite the reflexions. What is wanting in these individuals, is the force of reäction, which reëstablishes the equilibrium of the reason after excessive stimulations; they have many ideas, but these ideas are easily destroyed; much imagination, but from its own excess it is subject to become disordered. It is not so with children; the intellectual part of their brain is not, as in the adult, capable of procuring them very profound moral impressions; their ideas are scanty; their imagination, although vivid, retains impressions in a less degree; it necessarily results from this, that in them the ideas and imagination are not susceptible of as great an exaltation, and that consequently their delirium must always be, *cæteris paribus*, much less apparent than that of adults. Hence, it also results, that when, from the effect of the cerebral irritation, whether this be primitive or sympathetic, disorder occurs in the faculties of either, that of intellect must be the most prominent in adults, whilst that of instinct will be the most apparent in children. Thus the feeble development of the intellectual part of the brain induces a more intellectual delirium in adults, and a more instinctive one in children; or rather, in other terms, this feeble development induces these two deliriums in the two ages, but that of adults presents more intellectual lesions, and that of children more instinctive lesions, which has occasioned it to be less frequently termed insanity. The principle is always the same, but the forms differ: this is the whole difference.

The attention of medical writers on insanity has been strongly excited by the different forms which the delirium of the insane can assume, and its prodigious variety is not the least obstacle that they have met with in the classifications of mental alienations that they have attempted to make, for it is always on this that they have endeavoured to found them. Thus, they have general insanity, when the patients rave on all subjects; monomania, when they are disordered on but one; and these have been sub-divided into as many species as there may have been subjects of them: insanity without delirium, dependant on an

irresistible impulsion towards certain acts that the reason of the patient condemns; stupid insanity, in which the patients appear destitute of ideas, and which may be primary or secondary; dementia, idiocy, &c. Doubtless it is useful to pay attention to the form of the delirium in the insane, but if this form does not always furnish the principal curative indications, it is only a secondary object, and should not serve as a basis of a physiological classification.

Delirium is only one effect of irritation of the brain: in other words, delirium is only composed of intellectual phenomena, disordered by irritation of the brain. In fact, if in the normal state, a certain degree of irritation produces intellectual phenomena consonant with reason, it is clear, that in the abnormal state, an excessive irritation must give rise to intellectual phenomena, which differ more or less from the type of this same reason. This being admitted, we must expect to observe in irritations of the brain a number of incoherencies, which will be in relation neither with the moral causes, when the insanity depends on them, nor with the former habitudes of the patients; they can be only in relation with the degree and predominant seat of irritation. One patient was very mild and peaceable when sane, and became cruel and intractable when deranged. A man devoted to the study of the natural sciences, and whose character was very pacific, suddenly felt himself impelled with the desire of assassinating those who were dearest to him. This secret impulse filled him with terror; he endeavoured to destroy himself; he was prevented, and from that time he justified his impulse towards murder, by saying that he only wished to become an assassin, in order to be delivered up to justice, to expiate the atrocity of his propensity, and to be finally liberated from the affliction of a perpetual strife against a desire which was horrible to him. Truly, this kind of insanity has no relation with its cause, the study of natural history; besides, it is one of the most common species, and almost always the attempts to murder are directed against objects who are dearest to the unhappy maniacs. Moreover, this same series of ideas does not furnish the curative indication best calculated to combat the irritation, that of sanguine evacuations, for it shows itself in the acute state, with a general exaltation of the forces,

which requires copious bleedings and abstinence, as well as in the chronic state, with a debility which demands the employment of restoratives.

This is the case with the generality of monomanias; they are rarely in relation with the causes or character: one man is brave and becomes a coward; another, who had always appeared pusillanimous, manifests the most astonishing intrepidity; the most chaste and continent individual is found instantly transformed into a licentious libertine, and without his insanity having been provoked by the passion of love, &c. &c. It is because these kinds of insanity proceed from the irritation of certain parts of the brain which were quiet before the disease, or whose influence was neutralized by the reason. But if the localization of propensities in the brain be denied, we will say that these deliriums, forming a contrast with the habitual state, depend on the equalizing force being in fault, the instinct, rendered more imperious by the irritation of other organs, assumes its whole sway, and assimilates us, for a time, to children and to animals, when viewed in anger, in pain, in the rutting season, &c. But as we have, in the adult state, more thoughts than animals have, when we are insane, we present more extravagancies than they do; these extravagancies can be nothing but a disorder of thought, produced by the impossibility of the return of the cerebral irritation to the normal state which constitutes reason. We likewise think, that these two causes are often found united, and that the irritation of the different regions of the brain concurs with that of the viscera in the different kinds of insanity.

Experience also proves to us that these various species of delirium are compatible with hypersthenia, as well as with the opposite state; it is thus that dyspnœa, dyspepsia, palpitations, and convulsions, which are, like delirium, the results of the irritation of our organs, may coïncide with plethora as well as with anemia. These lesions would furnish the proper indication for employing revulsion, or contra-stimulation, used in its true signification, but they do not afford that for the detraction of blood except they coïncide with a degree of nutrition which may indicate the employment of sanguineous evacuations. The classification of insanities on the kind of delirium does not then always

furnish fundamental indications; but we shall return to this subject after having spoken of other peculiarities of maniacal delirium.

Hallucinations, of which we have already treated in the treatise on *Physiology applied to Pathology*, are very frequent among the insane. Hallucinations are nothing but perceptions, analogous to those which we have previously derived through our external senses, but they are no longer determined by the action of the senses; they are acts of a deranged memory, whose organs are irritated, and act without the agency of any external cause. Persons who are menaced with insanity, first perceive the formation of a number of extraordinary ideas and recollections, the recurrence of which surprises them; to this is sometimes added cephalalgia and heat; their reason at first resists the medley of unprovoked ideas and recollections; but it is fearful of giving way, and this often happens. Then the insane live in the midst of a legion of fantastic beings, they see them, hear them, reply to them, and find in the communication they have with them, the motives of their extraordinary language and actions, far more than in their relations with real objects.

Let us, in our progress, take advantage of this very remarkable fact, to confirm the difference that we have established between the delirium of children and that of adults. Our intellect never invents, it only recals and variously combines recollections; it is then clear that children, who, as yet have but few ideas, can only recal and combine a small number of recollections, and consequently, that their delirium must be incomparably more limited than that of adults.

If we were in want of an additional proof to demonstrate that the intellectual phenomena are only the product of irritation of the brain, it will be found in hallucinations; for the more intense the irritation of this viscus is, the more they are multiplied. It is when the blood is violently attracted towards the head, when this part is hot, high-coloured, when the carotids pulsate strongly and frequently; it is then, say we, that the visions of maniacs would appear to be most numerous and most influential on their language and actions. This is what constitutes the acute state of insanity, which nevertheless is only a chronic state, if we com-

pare maniacs with patients affected with an intense fever, accompanied by delirium. These latter, in fact, are equally a prey to hallucinations; but as the irritation of the brain is more inflammatory, and generally accompanied with an acute phlegmasia of the abdominal viscera, uneasiness, prostration, and convulsions, which are wanting in the maniac, are joined to the delirium, and the rapidity of the febrile action hastens the disorganization of the phlogosed tissues, or is dissipated in a short space of time, either by crises, or by the effects of art: a new proof in favour of the position we maintain as regards the organic cause of delirium.

The insanity which is termed acute, is only in reality then, an irritation of the brain and of certain viscera, which, from being less intense than that of the patients just alluded to, may last a much longer time without producing disorganization or death. This grade of insanity has only taken the name of acute, because it has been compared with other grades of less intensity, without comparing it at the same time to gastro-cephalitis of the highest degree; but this comparison, which we could not avoid making, places it in an intermediate grade of irritation, which we shall term sub-acute. This denomination appears to us the more just, as it is equally applicable to irritations of the gastric passages, the lungs, and all the other viscera; irritations which, like those of the brain, may be very slight, scarcely febrile, or entirely without fever. It is then the *scarcely febrile* cerebral irritation that constitutes the acute mania of authors. After having arranged it in its proper place, let us continue to follow it, and seek its results.

When it attains a very high degree of intensity, the fever is violent, the sympathetic phenomena of acute gastro-cephalitis, (we comprehend arachnitis,) declare themselves; the disease is no longer the insanity of authors; it is a phrensy, an ataxic fever, &c. To the mania termed acute, by those who consider delirium as the principal phenomenon, if it is a little less intense, such a degree of engorgement may take place in the brain, that the manifestations of the cerebral irritation may be disguised to a certain extent; then all the intellectual operations become confused, hallucinations, delirium, and loquacity no longer occur, and the patients fall

into a real stupor. This state may even exist from the very beginning, without having been preceded by agitation. This kind of insane patients are stupid and insensible to all the wants of nature. There are some who never move without some impulse is given to them, and who will take neither food nor drink, if care be not taken to introduce these into their mouths. They are then very near the apoplectic state, and they sometimes fall into it, or their state degenerates into lethargy, coma, &c. if art or a spontaneous crisis does not dissipate the cerebral congestion. Here then is the acute mania of authors, which, after having approached their phrensies, and their malignant or ataxic fevers on the one hand, is allied on the other to comatose diseases. But let us continue.

Neither of these terminations has taken place: the moral and the physical irritations are prolonged for several weeks, or several months, nearly in the same grade; finally, they diminish, hallucinations no longer trouble the patients; they are able to pay more attention to conversation addressed to them; they obey those who have charge of them, without resistance; they show themselves reasonable on a great number of points; and the majority of the sympathetic symptoms of the irritation of the viscera disappear. At this epoch, these patients may be divided into two classes; the one recover, but the organs which have suffered from the irritation remain very irritable, and it is only with time that they recover their strength; the others retain a species of monomania, that is, although reasonable on most subjects, they continue to be deranged on a single point. They are then in what is called a state of chronic mania. This state proves that one region, at least of their brain, has not lost all irritation; they are then affected with a partial irritation of the brain. There are some, who, without being affected with a special mania, continue to be subject to certain hallucinations, though much less dominant than those of the sub-acute state; certain others appear to be reasonable on all points, but if they are subjected to the trial of a gay and unrestrained conversation, if their liberty be restored to them, if they be permitted to indulge their appetite freely, or to take a small quantity of fermented liquor, their extravagancies will immediately reäppear; they are often even reproduced with-

out any extraordinary influence, and merely by the effect of repose, sleep, and certain atmospheric influences. All such patients should be considered as having too irritable a brain, in which the reäction, which ought to maintain the equilibrium, is not sufficiently powerful to triumph over the slightest irritation. A great number of these patients are otherwise in good health, and may even enjoy a long life, if no extraordinary influence causes a return of the irritation to its former state, or developes a congestion in some other viscus.

At the same time these cases are not the most common; from the habits of experiencing morbid vital erections, the brain at last becomes disorganized; transient attacks of congestion which may recur for a longer or shorter time, generally precede the alteration of its tissue. These attacks at first only produce loss of consciousness and momentary convulsions more marked on one side of the body than on the other; in short, attacks of epilepsy; but, after the lapse of a few years, it is perceived that the patients become idiotic; paralyses take place either in the voluntary muscles, or in the organs of sense; and these paralyses are generally, but not always and necessarily the signal of a disorganization already accomplished. Add to these symptoms which announce derangement of the nervous centre, those, almost as deplorable, which correspond to the simultaneous deterioration of the mucous membrane of the stomach and intestines, especially at the duodenal region; œdema, pain, dyspepsia, engorgement and fat state of the liver, the pale and sallow complexion which is inseparable from it, sometimes ascites, and at others diarrhœa, when the irritation has reached the colon: such is the ordinary end of these unfortunate individuals, when it is not anticipated by a violent attack of apoplexy, or by an affection of the lungs or even of the heart; for it often happens that the insane contract rheumatisms and gout from the influence of cold, that is, phlegmasiæ of the locomotive apparatus which constantly threaten the viscera and invade those of the thoracic cavity in preference. Thus the last degree of prolonged mania may end in paralysis, that is, in disorganizations which depend on chronic phlegmasiæ of the brain, as the first degree may become confounded with phrensies, that is, with acute phlegmasiæ

of this same apparatus. Delirium is found between these two extremes; it preserves this name if the encephalitis is rapid; it loses it to assume that of insanity if it is chronic; but it may be wanting, of which we have given examples, in certain slightly irritable subjects, remaining in the chronic state, without, however, the disease ceasing to be of the same nature, that is, still being an irritation of the brain and its dependencies; then as we have before said, the intellectual faculties are gradually destroyed, without having been previously much exalted, and the locomotive faculties become weak and lost sooner or later, according to the predominant degree of the cerebral irritation.

If now we occupy onrselves with the treatment of mania, we shall find a confirmation of what has been advanced as regards the errors of the classifications of this disease. In fact, the indications afforded by insanity do not differ from those, which physicians are accustomed to establish in all diseases from inflammatory irritation, against which they possess no specific. The evacuation of blood has always been and will always be the first and most efficacious of the sedative and antiphlogistic means. It is then, to this means in the first place that recourse must be had, when an individual not yet exhausted, is attacked with an inflammatory disease. Now, insanity is of this number; the first and principal basis of the classification of insanities, must therefore be but the degree of the sanguine irritation, and that of the plethora and forces. Hence, we shall place in the first rank, those insanities which approach nearest to acute encephalitis, that is, sub-acute insanities or cerebral irritations, whatever may be the form of the delirium. But, the delirium of these patients is not always general, loquacious, accompanied with exaltation of the muscular forces, and hurried actions; it sometimes presents itself with pains in the head or limbs, with depression and even prostration; and this in proportion as the sanguine engorgement of the stomach, lungs, or heart is combined in a higher degree with that of the brain. At other times, as has been seen, sub-acute insanity appears with stupor, confusion of ideas and a dislike to locomotion. But of what importance are these forms, if the vessels are filled, if the body is surcharged with blood, in short, if

the indication for blood-letting is presented in a very evident manner.

To the indication for blood-letting, the quantity of which must be determined by the experience of the practitioner, succeeds that for external cooling applications to the surface, and it certainly will not be denied that the employment of the latter is attended with the same results as those of the former, when it is found that the abstraction of caloric can only be useful, where the sanguineous system, or in other words, the circulatory function, is very energetic; but it is not our object to determine the part to which the application of cold is to be made; this will be done without trouble by the touch, and by the inspection of the different regions of the body. The indication for abstinence and for cooling or emollient drinks, is predicated on the same grounds as those for bleeding and cold. Afterwards come quiet, seclusion, and personal confinement, which are required in proportion to the indication for the employment of the preceding, though they are also useful after the use of these means, with hydrocyanic acid and digitalis as sedatives of the nervous excitation. After insanities of a strongly-marked inflammatory character, will then be arranged, as less inflammatory, those in which the delirium is noisy and general, notwithstanding the employment of sedatives to the sanguineous system.

Revulsive indications present themselves, in the general theory of the phlegmasiæ, immediately after the direct antiphlogistics; is it not the same in insanity? But here the revulsions are both physical and moral. We are guided in our use of the first, by the old points of irritation which it is important to reëstablish or to replace by artificial irritations, excited in such places as may be deemed proper. The consideration of the physical causes of insanity is therefore secondary to that of the degree of inflammation, whatever may otherwise be the form of the delirium; or if it be wished, the form of the delirium is not here again the principal ground-work of the nosological classification. It is, as regards moral revulsions, that the form of the delirium furnishes the greatest aid. In fact, amusements, excursions, distractions of all kinds, whether by reasonable conversation, by reading, by games; finally, by some kind of work that will occupy without

engaging the attention too much, and especially without irritating the nervous system; can all these, we ask, be considered otherwise than as so many revulsive means? Now, the kind of delirium is what ought to guide the practitioner in the choice of these means. But it is always clear and evident that this consideration ought only to succeed the former; that physical means should precede the moral, and consequently that the doctrine of mental alienations is very badly understood, if it is pretended that their most efficacious treatment is entirely by moral means.

The art of preventing relapses is composed of a judicious combination of all the means we have indicated. It is to be wished in the treatment of mania that we possessed sedatives acting directly on the nervous system, that they might be employed immediately after physical antiphlogistics and revulsives, but do such desirable sedatives exist? We are obliged to seek for them among the narcotics, which are all poisons of a more or less active character, whose effects in large doses, is to engorge the brain, induce delirium and consequently to add to the very modification it is wished to destroy. We must therefore employ them with caution. As to the mineral sedatives, such as the acetate of lead, bismuth, and zinc, they harass the stomach without exerting any favourable influence on the delirium. It is from time, patience, and a constant attention in removing all causes of excitation, that we are generally to expect a cure of long-continued insanity; but we must always be prepared to recur to antiphlogistics and revulsives when the reäppearance of inflammatory symptoms cannot be prevented by the expectant mode of treatment. The indications presented by organic alterations yet remain to be spoken of; but alas, they are but of a palliative nature, and as it does not enter into our plan to exhaust the subject, we shall here terminate our considerations on insanity.

PROP. CXXIV.

No extra-cerebral inflammation can produce mania without the concurrence of inflammation of the stomach and

small intestines; and the liver in this case is affected only secondarily.

It is truly asserted that peripneumony, pleurisy, peritonitis, the phlegmasiæ of the skin, those of the articulations, &c. may from their extreme intensity, occasion delirium; but it is only transient. That which continues and becomes chronic, the only kind which is termed mania, in never produced by these affections so long as they are simple and continue in their first seat; but if they cease and are replaced by irritation of the encephalon, mania may result. The same thing may occur if the gastric passages are secondarily affected, and if gastro-enteritis is super-added as a complication to the primitive phlegmasia. But gastritis and gastro-enteritis may, although existing alone and without complication with another extra-cerebral irritation, act upon the brain with sufficient energy to produce in it a durable irritation, sufficiently intense to keep up the delirium which is termed insanity. Finally, in all cases, and they are very numerous, in which the liver becomes altered and impaired consecutively to insanity, this depends upon the gastric passages, and especially the duodenum having suffered irritation, for the brain exercises no influence upon the first named viscus except through the intervention of the latter organs. The liver is here affected as in all chronic gastro-enterites, and the maniacal delirium does not act as a specific cause to produce its alteration. Such are the facts indicated by the proposition under consideration, and they merit attention as indicative of the close connexion existing between the brain and the organs of digestion, and which in fact is closer than exists between it and any other organ. This should open the eyes of practitioners to the possible consequences of regimen and medicaments, in persons predisposed to insanity.

PROP. CXXV.

Arachnitis is more frequently consecutive to a gastro-enteritis, than a primary affection; but delirium, insomnia,

and convulsions, which are often the signs of it, may be kept up by this gastro-enteritis, disappear with it, and leave after death, in the arachnoid and pia mater, no traces of inflammation, or less marked ones than those which are found in the stomach, &c.

Here is another fact, which deserves the closest attention. In fact, in the practice of physiological physicians, who are careful to arrest gastritis and gastro-enteritis in their commencement, phlegmasia of the arachnoid is very unusual. It is met with only in persons whose encephalon has been subjected to particular causes of irritation. It is not so in the practice of the ontologists, and all those who follow the old routine. When persons, the least disposed to cerebral affections, who are affected with acute gastro-enteritis, are treated by emetics, purgatives, and different stimulants, they speedily present symptoms termed nervous. This can only be explained by admitting, that the stomach communicates irritation to the brain. This irritation at first is only a sympathetic phenomenon, which produces the first nervous symptoms, such as head-ache, delirium, convulsive movements of the locomotive muscles, &c. If it is arrested at this point, there is no true inflammation; but if it be allowed to go on, the sanguineous engorgement which it produces in the brain, may be converted into phlegmasia, and this last predominates sometimes in the very substance of the organ, and at others in the pia mater, or in the arachnoid. There are certainly some cases in which the brain is so predisposed, that the irritating agents which act upon the economy, produce their first effect upon that organ; the author has not pretended to deny this, he has wished only to say, that these cases are the rarest in medical pathology, and to put practitioners upon their guard in the commencement of gastro-enteritis, that they may prevent the development of phlegmasiæ of the encephalon and its membranes.

PROP. CXXVI.

All extreme suffering, whether from inflammation of

an organ, from stimulation of a branch of a nerve, or moral cause, engorges the brain, and tends to develope inflammation in its parenchyma, in its pia mater and arachnoid. But the sufferings of the stomach are the most painful of all, and all the others produce this gastric distress. There is never then a gastro-enteritis, without some degree of cerebral irritation. All these remarks should be applied to encephalic hæmorrhages.

This proposition is a development of the preceding, it recalls the office of the encephalon, which consists in collecting the irritations of all the organs, and transmitting them by means of the nerves, to the different tissues of the organism; now, it is in fulfilling this function, that the brain so often contracts super-irritation. But it must be remarked, that it is not always because the sufferings of the stomach are accompanied with acute pains, that the encephalon becomes inflamed on receiving the irritation of this viscus; it is because its association of action with the stomach is the most intimate of all the associations of the human system. We say of the human system, for it appears to us, that it is not so close in any other animal as in our species; because there is none in which the brain is so developed, and exercises so great an influence upon all the other organs. Be it as it may in relation to this last point, it is entirely certain, that every kind of pain may excite in us inflammation of the encephalon, and it is a point, in respect to which pathologists cannot be too much on their guard.

It is further stated in the proposition, that all this is applicable to cerebral hæmorrhages. This expression is not placed there without a motive; it supposes that the author has observed, that apoplexies, which are always the effect of irritation of the brain, are often preceded by that of another organ, and particularly by that of the digestive organs. Dr. Richond has been fully aware of this fact, and has largely developed it in his excellent work, *De l'influence de l'estomac sur l'apoplexie.** We should here add, that it is in the duodenum, that the irritation which predis-

* For a review of this work, see Am. Journ. Med. Sc. Vol. VIII. p. 436.—Trans.

poses to apoplexy, frequently predominates for a longer or shorter time, and that the hypertrophy of the heart always facilitates the explosion of that disease.

PROP. CXXVII.

Tubercles, cancers, &c. of the brain, are produced by chronic inflammation of this viscus.

This proposition is one of those, the correctness of which is at present most frequently denied. Many physicians cannot imagine that the white masses termed medullary sarcoma, which seem to differ from the brain only in being rather more consistent, and in being semi-transparent, can be the effect of chronic inflammation. They attach the idea of inflammation only to tissues greatly injected with blood. They will not admit that the same irritation, which, in its commencement had accumulated the blood in a part, may, on being protracted, on losing its intensity, often by the revulsive influence of another irritation, restrict itself to produce an accumulation of white fluids, and an anormal hypertrophy, capable of creating tubercles and medullary sarcoma. For myself, I must confess, that this mode of production appears to me the only one that is admissible. It is always evident in the adenites and ganglionites, which are met with externally, in the subcutaneous tissue; it is perfectly distinguishable in chronic arthritis, in indurations of the cutaneous and subcutaneous cellular tissue; it incontestibly occurs in the formation of tubercles of the lungs, in that of cancers and ganglionites of the digestive tube, and of the mesentery, in the induration and obstruction of the liver, &c. In all these cases, irritation and heat open the scene; they decrease, and the vice of nutrition continues its progress, until a renewal of irritation causes the reäppearance of the inflammatory phenomena. Why not then explain in the same manner the production of tumours and cancers of the brain? The further I advance in my practice, the more convinced I become in relation to this point. It results from the constant observation of the happy effects of the antiphlogistic treatment, in preventing

all kinds of disorganization; and I do not entertain the least doubt of its one day becoming the general belief of intelligent physicians.

All those in whom medullary sarcoma and cancers are met with in the brain have experienced irritation in this organ. This irritation sometimes follows distress of mind; in other cases it succeeds to prolonged gastro-enteritis, and I have met with more than one example of it. It also occurs subsequent to the disappearance of cutaneous irritations which are themselves incontestibly of an inflammatory or sub-inflammatory nature. Why should vices of nutrition capable of producing hypertrophies, independently of an augmentation of the organic action be admitted? But if the existence of this augmentation be avowed, upon what ground can it be attributed to any thing else than to the general laws which preside over the formation and preservation of the organs? Is it that there exists many principles of action? Is it not always the same contractility which animates all the tissues; the same innervation which from time to time super-excites them, which raises their tone above the normal standard, which forces them to perform their actions quicker, and to invite more fluids into them than common? But if we are compelled to admit all this, what reason is there for establishing differences of nature in the result of this augmentation of the action of the organs? Thus, in one case it attracts a larger quantity of blood and produces phlegmasiæ, in another more lymph and forms white tumours, and scirrhus; in a third more fat than albumen, whence result lardaceous tissues; finally, in many others, it developes fibrous, cartilaginous, and osseous tissues, all which have their analogues in the economy, does it result that it is necessary to establish fundamental distinctions and to suppose particular principles, other than those which preside over the exercise of our functions? Doubtless not, and the difference between these alterations, so dissimilar in appearance, is only that of difference of degree of the excitation and of the particular temperament of the organs in which it is developed... When these diseases are examined at their very commencement, they will all be found under the influence of general irritation, and the conviction that they may all be developed by the same external cause will not fail to strike us. When they

are actively treated by general antiphlogistics, they will all yield with equal facility. Yes, all, without excepting those depending on stimulants, which are called specific. Is more necessary to demonstrate the identity of their nature? and is it not a mere dispute about words, to which this subject constantly gives rise? I continually offer up vows that every physician may be one day convinced of these truths, because I am sure that a prodigious diminution of *organic vices or affections* will necessarily result from this conviction... I venture even to predict that they will no longer be met with, except in persons, who will not be able, or shall not desire to subtract themselves from the action of perterbating excitants, and in constitutions originally debilitated and degenerated, which are no longer in concord with the modifiers of their species, and who from their birth are devoted to inevitable death.

In fact, why are robust families who live in healthy countries, and commit no excesses, exempt from tubercular, lymphatic, and medullary sarcomatous degenerations? Why do physiological physicians, at present residing in every part of France, find it so easy to cure all incipient irritations, when they practice in a salubrious country? Why does more than a year often pass without their meeting with lymphatic affections, like those which are so common in insalubrious countries and in large cities? is it that the inhabitants of these latter possess principles of life which do not exist in the others? is it that their fluids contain peculiar morbific matters? Certainly not; the irritations which occur in them would yield with the same facility as those of robust subjects, if it were always possible to attack them at their commencement, and to remove all the causes capable of renewing them. But if these conditions are wanting, the weakness of many of them exposes them to continual relapses and to degeneration of tissues; and the extinction of families is the inevitable consequences of it.

It is from observation that I have arrived at these conclusions. I know that it is impossible in the actual state of things, to induce all physicians to adopt them; but I am persuaded that they have attracted the attention of many practitioners, and I hope that their success will insensibly lead others to adopt the same views.

PROP. CXXVIII.

All encephalic irritations may terminate in apoplexy.

This proposition requires no commentary.

PROP. CXXIX.

The term apoplexy denotes the cessation of the phenomena of relation. Two principal degrees of this disease may be distinguished by the absence or presence of partial paralysis; but no division of it can be founded on the prevision of the forms of the organic alteration of the brain.

Cerebral hæmorrhages are the most common causes of apoplexies; but we know at the present time, that the sanguineous congestions which can produce these hæmorrhages, may also determine apoplectic symptoms and paralysis, and that this apoplexy may be as promptly fatal as if it had caused an actual extravasation. An example of this occurred in one of the clinical wards of Val-de-Grace, in the early part of November last, (1825.) A patient affected with gastro-enteritis, accompanied with icterus, but unattended by fever, suddenly died on taking a spoonful of broth. A large brown spot was observed on post mortem examination, in the mucous membrane of the stomach, with redness in the duodenum and small intestines. The substance of the brain was extremely dense, and filled with blood, especially the convex part of the cerebral hemispheres; but no other effusion was observed than a slight sanguinolent exudation in the arachnoid, which certainly was not the cause of death. What existed in this subject, in both hemispheres, may be limited to a single one in other cases, and then there is only paralysis. It is very difficult, perhaps even impossible, at least in the existing state of the science, to distinguish at first view, apoplexies and paralyses, occasioned by simple congestion, from those which depend on

effusion; but when the patients do not die, the rapidity of the convalescence and the absence of consecutive paralysis, do not permit any doubts to be entertained, that it was not caused by hæmorrhage. Many examples of intermittent and periodical apoplexies and paralyses are related, which are as irreconcileable with the existence of a sanguineous extravasation.

The terms apoplexy and paralysis, are not then synonymous of cerebral hæmorrhage, as is at present supposed by many physicians: there is a degree of congestion, which may interrupt the innervation of the brain, either on one, or both sides at the same time. I know that it is desired to designate this state by the expression, *rush of blood, (coup de sang,)* but this expression signifies nothing, if we have not the means of determining immediately, whether the rush of blood, which is always only an accumulation of that fluid in the brain, has or has not produced hæmorrhage. But until this question is solved by post mortem examination or recovery, no one can answer it. We expose ourselves then in using this epithet, to the admission of a mode of alteration which does not exist, and to form a diagnosis which will be falsified by the result. It is then better to employ the term cerebral apoplexy, the meaning of which is unequivocal, since it conveys the idea to every physician of an abolition of the functions of relation: afterwards the course of the disease will furnish the means of determining whether this abolition depends upon an hæmorrhage, a simple primary congestion, or a congestion excited by an antecedent point of phlegmasia, either acute or chronic; either accompanied with the production of extraordinary tissues, as tubercles, medullary sarcoma, or without them, and resulting from suppuration of the parenchymatous tissue, or of the membranes of the brain.

Such is the true meaning of Prop. CXXIX. Its object is to exhibit the inconveniences of the distinctions and classifications of diseases, founded solely upon the kind of organic alterations, and to substitute for it distinctions based upon the mode of alteration of the irritability and sensibility of our tissues. This method, indeed, never subjects the pathologist to errors of diagnosis. When irritation exists in an organ, nothing can prove that it does not exist; when a function is abolished from excess

of local inflammation, or rather from the want of cerebral innervation, the thing is evident, and the event cannot demonstrate the contrary. It is from this double state, that all the indications should be derived, and the treatment may be adopted without fear of being deceived, and without being obliged to change the diagnosis, if the succession of symptoms, or the post mortem examination should demonstrate the existence, or non-existence of the kind of organic alteration which had been at first suspected. In other words, the absence of the irritation, the degree of this phenomenon when it exists, and the determination of the precise spot which it occupies, are the basis of the diagnosis, as of the classification of diseases. The mode of alteration is a secondary object, the investigation of which is unquestionably very useful, but with which the physician may dispense, without being deprived of the data which must guide him in the treatment. This question is already developed in the *Examination of Medical Doctrines*, but as it is exceedingly important, we have thought it proper to recur to it in this place.

PROP. CXXX.

Inflammation of the internal or mucous membrane of the stomach is termed gastritis; but it can never be verified in the dead body, but in connexion with inflammation of the mucous membrane of the small intestines. It would be more correct then to give to it the name of gastro-enteritis.

It is well worthy of remark, that inflammation of the stomach is always accompanied with that of the small intestines. Our predecessors had no idea of this fact; they had not even any satisfactory knowledge respecting this kind of inflammation; and that resulted solely from their having taken phlegmon and erysipelas for the fundamental types of phlegmasiæ. As this subject is treated in detail, in the *Examination of Medical Doctrines*, we will not enter upon it here. We will endeavour rather to investigate the reason of this coïncidence of enteritis with gastritis.

The irritations which occur in the epigastric region, always first commence in the stomach and duodenum. When they are of a certain intensity, they produce painful morbid erections, which may be converted into phlegmasiæ. From these points the inflammation extends to the remainder of the small intestine; but as the sensibility is obtuse through the whole extent of this intestine, after it passes the duodenal region, and as the pains of the duodenum confound themselves with those of the stomach, the attention of patients is directed solely to this latter organ, and the disease is pronounced a gastritis, when there is really a true gastro-enteritis.

PROP. CXXXI.

Inflammation of the mucous membrane of the small intestines is called enteritis. Examination of the body after death, shows it to have sometimes existed without gastritis, but its isolated existence can never be positively determined before dissection, and besides, the gastritis has always preceded. It is better therefore to name it gastro-enteritis.

Although the stomach is irritated in enteritis, in most cases it performs its functions; and sometimes even it appears to execute them more actively than in the normal state; but this occurs only in slight grades of enteritis. It is thus, that young persons, attacked with what is called tabes mesenterica, are frequently tormented with a very great appetite, although their abdomen is meteorized and painful, and they have fever. This same grade may also present itself in adults, but it is of rarer occurrence in them. Here is another one of those facts which our predecessors had not discovered. The idea of inflammation could not be associated with that of augmentation of the digestive powers. They had, therefore, recourse to engorgement of the mesentery and to diarrhœa, to account for the appetite of children affected with gastro-enteritis; but when the pain and other symptoms of irritation were seated in the stomach

itself, without sensible engorgement of the abdomen, the increased appetite was attributed to a nervous state, under the name of boulimia. Thus they had two methods of explaining the same phenomenon—the same kind of affection of the same organ. This discordance of theory could proceed only from the most complete ignorance of the physiological state of the diseased organs. Hereafter we shall consider these grades of phlegmasiæ.

PROP. CXXXII.

Gastro-enteritis presents itself under two forms: with predominance of gastric phlegmasia; 2d. with predominance of inflammation of the intestines. Gastric pain, repugnance to taking food, the rejection of it when taken, or difficulty of bearing nourishment characterize the first, (gastritis:) the power of satisfying the thirst, and the rapid absorption of appropriate liquids are the signs of the second, (enteritis.) The other signs are common to both with a very trifling difference.

This proposition exhibits only the fundamental and distinctive characters of acute gastritis and of acute enteritis. The character of these phlegmasiæ will be given in another proposition; but it is well to say here something respecting the nature of the pains produced by inflammation of the stomach; for the habit contracted by many physicians of judging of internal inflammations by the symptoms of external ones, subjects them to a multitude of errors.

The pains of the stomach are very far from being always similar to those of phlegmon or of erysipelas, and of being constantly referred to the epigastric region. Pulsatory pain rarely exists in this region; and even when throbbing of the arteries is very marked and perceptible there to the touch, patients most frequently are not sensible of it unless they place their hand on the part, and they do not complain of its being painful. It appears so to them only in gastrites which attain almost to the degree of phlegmon, and especially following poisoning by corrosive substances which render the stomach very painful.

Acute gastritis sometimes occasions burning pain, but it is not always circumscribed to the region of the stomach, or at least referred to the centre of the epigastrium, the place in which physicians are in the habit of thinking it necessary pain should be felt, when arising from the stomach. Patients usually refer the pain to the middle and anterior part of the chest under the sternum and false ribs; often even to the whole tract of the œsophagus as far even as the throat, where it sometimes appears more insupportable than any where else. Many complain of a sensation of internal heat, like that of a furnace, in the whole of the central part of the thorax, and extending on one side to the throat and on the other to the umbilicus. There is usually corresponding with this pain, a sensation of heat and fatigue in the muscles; accompanying it, there is also head-ache, and burning of the eyes and mouth; the patient is restless and in this distressing condition, cannot assign any particular spot as the seat of the distress which torments him. This is the reason why the burning pain in the stomach has not been referred to its true seat. The disease is said to be one of the whole body, and the *fever* is pronounced to be idiopathic.

Great variety is observed in the sensibility of the parts surrounding the stomach. There are but few cases in which the patients complain of a fixed pain in the epigastrium; and when this pain does exist, pressure sometimes exasperates and at others seems to relieve it. Most commonly pain is produced only on tolerably strong pressure. There are some cases however in which it is acute, continued and becomes insupportable on the slightest pressure. This last occurs most frequently in cases of poisoning by corrosive substances, and after the ingestion of one of acrid and caustic properties. This degree of pain also occurs in very violent acute gastritis, caused by miasmatic poison, and especially in summer and in warm climates. It is also present in the commencement of some eruptive phlegmasiæ and more particularly in the incipient stage of confluent small pox. But there is an immense number of cases of acute gastritis *gradually* induced by the abuse of liquor, and by moral affections in which the stomach appears to have lost in part its sensibility, so that the pains of this viscus are confused, and the disease is recognised

rather by the sympathies and the interruption of the digestive function, than by decidedly painful local sensations.

There are also some persons whose viscera have but little sensibility, and do not become painful until after very great stimulations. Such persons may experience the most acute gastritis and enteritis, without these inflammations being revealed by a single well characterized local pain. Hence the necessity of according great importance to the sympathetic phenomena of which we shall soon have occasion to speak.

Some acute gastrites are accompanied with extremely acute pains, not in the epigastric region, but in one side of the chest, opposite to the false ribs, or in the back, and most commonly towards the scupula. These pains are increased by pressure, and sometimes simulate pleurisy or rheumatism. They indicate the predominance of the irritation towards one of the orifices of the stomach, or in its great curvature; and often those persons who suffer from them in the acute stage had long before experienced them from the effect of chronic gastritis. These cases should be considered as the most fatal. We shall directly explain the reason of this.

There are also other kinds of tolerably distinctly marked gastric pains; but as they more frequently occur in the chronic than in the acute stage, we will not notice them here.

The repugnance to stimulating drinks arises from a kind of uneasiness which is not commonly called pain, but which does not the less depend upon the sensibility of the stomach being affected in a painful manner. The impossibility of supporting and even of swallowing the mildest fluids, such as mucilages, the solutions of gum and pure water, also depend on the painful manner in which the stomach is affected by the ingesta, and indicates the exaltation of the sensibility of this viscus. We should not be too much astonished at hearing some physicians complain of the absence of symptoms indicative of gastritis, or requiring well determined pains to acknowledge its existence, when, in an acute fever the patients testify an invincible repugnance for heating drinks, or when the least stimulating fluids cannot be swallowed without aggravating the anguish of the patient.

The vomitings which occur in acute gastritis always testify the

existence of an exaggerated morbid sensibility, that is, of pain; this pain is constantly exasperated by the repeated contractions of the stomach, and it soon becomes sufficiently intense to be continued and lacerating, accompanied with pain of the head and whole locomotive apparatus. Such is the case in yellow fever, and cholera morbus. Is more required to attest inflammation of the stomach? Nevertheless, the habit of taking external phlegmasiæ as the prototypes of inflammations in general, exercises such an influence, that neither the bad effects of stimulants, nor post mortem examinations, has as yet been sufficient to convince all physicians that gastro-enteritis is the principal phenomenon of these diseases. However, they are not ignorant that the sensibility of the viscera, modified by the presence of the great sympathetic differs much from that of external parts. But the habit is inveterate, authorities are for it, and the testimony of the senses does not suffice to destroy its fatal influence.

The proposition does not attribute any pain to acute enteritis; it is only said that the power of satisfying thirst and the rapidity of the absorption of ingested fluids, show that the irritation does not predominate in the stomach, and that the small intestines participate in it. This is observed in most acute gastro-enterites, commonly termed *gastric fevers*. These symptoms, in fact, suffice to characterize this disease, in indicating that the inflammation has extended over the whole mucous membrane of the stomach and small intestines; but that does not prevent the possibility of a predominant point of irritation existing in some portion of these latter. Then it is possible that sensibility may be developed in it to the degree of producing pain. This is the subject of the following proposition.

PROP. CXXXIII.

Acute inflammation of the mucous membrane of the small intestines, without affection of the peritoneum, in the majority of cases does not occasion colic. It is almost always unattended with circumscribed pain, but is often accompanied with a sensation of heat and of undefinable uneasi-

ness, and with constipation. Intussusception of the small intestines, far from causing pain, does not commonly produce even colic.

Since this proposition was written we have multiplied our researches in relation to the point of which it treats, because the sole object we have in view is truth; in fact, it is rare in acute gastro-enteritis unaccompanied with dejections from the bowels, to hear patients complain of colic, but when the umbilical region is strongly pressed upon, they often say that they experience an obtuse pain, a disagreeable sensation in the whole abdomen, resembling that of an incipient colic, but which ceases when the abdomen is no longer pressed upon. We have however met with some who complain of feeling real pain, without comparing it exactly to common colic. It is a peculiar kind of pain *(endolorissement)* almost always accompanied with a sensation of burning, and which it is often difficult to support. In all these cases, and in those, which are much more numerous, in which no pain is felt, there exists a certain degree of meteorism, and the greatest heat is experienced in the place where the phlogosis predominates.

Whatever may be the kind of pain in acute enterites, it is rarely circumscribed, which we believe depends on the inflammation occupying an extensive surface, and that the pain, whether local, or arising sympathetically from the stomach and duodenum, prevent the perception of the irritation of the small intestines. What seems to us to confirm this assertion, is, that chronic enteritis, when not complicated with gastro-duodenal phlogosis, is sometimes attended with circumscribed pain, as we shall directly see. As to intussusceptions, we have observed them subsequent to acute general gastro-enteritis in many patients who had not complained of any pain in the region of the small intestines; perhaps if they depended upon a partial and primitive point of inflammation of the intestines they would be painful. This is a subject to which it is well to call the attention of physicians. Certain local pains in the abdomen with vomiting may perhaps depend upon a similar phlegmasia, which, not being arrested at its commencement, may produce intussuscep-

tion, inflammatory congestion, peritonitis, and death. Perhaps it would be better for the patient to consider what is termed *ileus* as the commencement of an enteritis, or of a peritonitis, than to attribute the symptoms to an entirely nervous intussusception of the small intestines.

It is impossible for us to say why these intussusceptions are more common in some seasons than in others; but it is very certain that great varieties exist in this respect. We have remarked that it occurs more frequently in children than in adults, and it is rarely met with in old persons. Does this arise from the intestines being more excitable in the first? We think it does; but as the sensibility is also much more exalted in early age, and as nevertheless intestinal intussusceptions are often indolent in children, it is correct to conclude that the small intestines have little sensibility.

Tabes mesenterica, so common in these subjects, may furnish us additional proof of this, for very frequently, notwithstanding the heat and tumefaction of the abdomen, pain is not felt there until diarrhœa supervenes, that is, when the inflammation has extended past the ileo-cœcal valve.

Such is our opinion; facts will determine whether it is just or not, and we will not be the last to seek whether they shall present any confirmatory evidence.

PROP. CXXXIV.

Colic, frequent dejections, and tenesmus, are the proper signs of inflammation of the mucous membrane of the colon.

This truth is not new, it was known to Van Helmont; but this point had not been sufficiently insisted on, that the inflammation of the small intestines alone cannot occasion all these phenomena. Many authors confound enteritis with colitis, or colo-rectitis, and when diarrhœa supervenes during the course of pretended idiopathic fevers, physicians were far from seeing in this complication the certain proof that the inflammation had

finally extended to the large intestine. They watched, and waited the event, to know whether the diarrhœa was critical, or whether it was not rather an unfavourable epiphenomena.

There was the same confusion in relation to diarrhœas which occurred towards the termination of pulmonary phthises, and other consumptive diseases; they were named *colliquative;* they were looked upon as the symptom of the general dissolution of the body; they were far from suspecting that they were only the positive sign of an enteritis, previously limited to the small intestines, and not extended past the ileo-cœcal valve to reach the depot of fæcal matters. It was then useful to assign to all the regions of the intestinal canal the characteristic signs of their respective phlegmasiæ. Now this is precisely what the physiological doctrine has done, in separately describing duodenitis, enteritis, and colitis. As to the signs of inflammation of the rectum, they are sufficiently evident for it to be unnecessary to trace them in this commentary.

PROP. CXXXV.

The term enteritis being appropriated to inflammation of the small intestines, cannot serve to distinguish that of the colon; the latter must therefore be called colitis. But the two succeed one another, and are associated together.

In fact, inflammation may be developed in the rectum, and from that extend through the colon to the small intestines, and even as far as the stomach. It frequently propagates itself from this last viscus, by the small intestines, to the colon, over the whole of which it extends; examples of which we have cited. It often arises in the ileo-cœcal region, and extends to a greater or less distance, sometimes upwards, at others downwards, finally, in some cases, but very rarely, it seems to arise simultaneously in the whole digestive tube.

These various developments and different courses of the inflammation are designated by particular names by authors, which

should not impose upon attentive practitioners. Thus, when the inflammation commences in the colon or rectum, it is termed dysentery, and this disease is called gastric, bilious, mucous, putrid, or adynamic, if the phlogosis extends upwards, and it is said to be complicated with fevers of those names.

When the inflammation continues in the small intestines, it is a fever; if the colon is secondarily affected, it is the tabes mesenterica in children, whilst it is a *mesenteric* or *slow nervous fever* when it occurs in an adult, and the appetite is destroyed; for it often continues in young subjects notwithstanding the most intense hectic fever. Finally, the epithets diarrhœa, nervous, inflammatory, vegetable* colic, the colic of Poitou, of Madrid, and of lead, indicate some one of the combinations noticed, in which fever may be absent, supervene consecutively, or cease, according to the degree of the phlegmasia, the temperament, the kind of life, and the remedies employed in the treatment of the disease.

PROP. CXXXVI.

Gastro-enteritis exists without any fixed pain when the inflammation is not violent and does not predominate in the stomach or duodenum, and even pressure on the abdomen does not produce pain.

This proposition refers to the acute gastro-enterites designated by authors by the names of bilious, gastric, mucous, and sometimes inflammatory fevers. Pain may be absent even in that degree of these *fevers* which is termed putrid or adynamic. But as we have explained the different seats and causes of the pain in Proposition CXXXIII, we need not again dwell on it. We regret, however, to still see some practitioners ignorant of the value of sympathetic phenomena, and knead the bowels with

* The French term colic *végétale*, when it is produced by the use of new wine, imperfectly fermented cider, and unripe fruits.—Trans.

force, to develope there some pain which may authorize them to term the fever gastric, mesenteric, &c. and to discover curative indications.

PROP. CXXXVII.

Gastro-enteritis is distinguished by the sympathies which it displays; viz. 1st, the organic sympathies, as redness and heat at the outlets of the mucous membranes and of the skin, alteration of the biliary, urinary, and especially of the mucous secretions; 2d, sympathies of relation; these are pains in the head and limbs, aberration of the faculties of perception and judgment. The influence exercised upon the heart by this inflammation is common to many other phlegmasiæ.

If we add to these symptoms those which are induced by derangement of the digestive function, and the different pains of the stomach and intestines which have been noticed in the preceding propositions, a faithful picture will be formed of these diseases. As it is not our object here to write a didactic treatise on pathology, we will not enter upon these details, but will limit ourselves to the remark, that the distinction of the sympathies into organic and relative, singularly facilitates the description of irritative diseases, and determines, as completely as could possibly be desired, the indications which should be fulfilled.

The sympathies thus distinguished, also serve, by the influence which they receive from external modifiers, to enlarge the practitioner's knowledge of physiological semeiosis—for example, when he sees a local bleeding relieve a delirium, and a draught of broth instantly reproduce it, is he not correct in saying, "this delirium depends upon irritation of the stomach?" He may reason in the same manner respecting the contusive pains of the limbs and those of the head, for they are observed to increase and diminish with the gastritis. The practitioner is

then correct in drawing from these facts the conclusion, that irritation, excited in the brain by the influence of gastric inflammation, is reflected into the locomotive apparatus, and that, consequently, the sensation of general uneasiness, and the muscular debility, do not indicate a disease *totius substantiæ*, or an essential fever as authors represent it.

The organic sympathies are not less significative. For example, the alteration of the mucus of the tongue, which is regarded as indicating a bilious or mucous saburræ, shows that this saburra is only an effect of irritation of the stomach, since the tongue becomes clean in a few hours after a local bleeding, and does not become foul again unless recurrence is too soon had to stimulants. The variations of the urine under the influence of the same modifications, manifestly prove that the alteration of the secretories is not the effect of a morbific matter, requiring the labour of coction of a certain duration; these variations then victoriously overthrow the humoral and ontological theories. Finally, the facility with which the redness of the tongue, of the throat, and of the conjunctiva, is dissipated or aggravated by calming or increasing the irritation of the stomach, does not permit any doubts to be entertained as to this redness being only a sympathetic repetition of that which exists in the internal membrane of this viscus. It is thus that the true physiological physician makes advantageous use of every fact.

PROP. CXXXVIII.

Acute gastro-enterites, when exasperated, always give rise to stupor, blackness of the tongue, (fuligo,) lividity, fetor, prostration, and exhibit all the phenomena of what is called putrid, adynamic or typhus fever: those in which the irritation of the brain becomes considerable, whether it amounts to the degree of phlegmasia or not, produce delirium, convulsions, &c. and are termed malignant, nervous, or ataxic fevers.

That all gastro-enterites, when they reach a certain degree of

exasperation, assume the characters of what are termed putrid or adynamic fevers, is one of the most important facts in the history of the science; because it destroys and saps the very foundations of all the theories of fevers that have been framed from the time of Hippocrates to the present day, because it refutes all the reasoning on which each has endeavoured to ground his practice; finally, because it fully justifies the axiom of the Coan sage, *experientia fallax*. In fact, the astonishment of a reflecting man must be at its height, when it is proved to him, that the means by which it was so long supposed that these diseases were cured, are precisely those that produce and keep them up; if he asks himself, what is the value of observation, when it could mislead men of genius in such a manner. Bichat has said, *what is observation, if the seat of the disease be unknown?* It was not enough to ask this question, the nature of the disease must also be known. The seat of dyspepsia has never been questioned, and yet this disease has always been badly treated. The seat of putrid fever has also not been entirely unknown; to begin from the epoch of Galen, many physicians of his school located the focus of putridity in the intestines, which according to them must give rise to it. The fetor of the breath, that of the alvine excretions, the meteorism, the sensation of burning heat which patients refer confusedly to the base of the thorax and the epigastric region, the pleasure they testify in taking cool and acidulated drinks, ought naturally to have suggested this idea to attentive physicians; hence the humoralists have based all their principles of treatment on it. It was to obviate the corruption of the bile, the mucosities and saburræ, and to prevent these corrupted matters from passing into the blood, and causing a putrid dissolution of it, that they prescribed emetics at the commencement of febrile diseases; and at a later period, when these affections had completely assumed the putrid character, they attempted to do nothing except to dilute this focus of corruption of the first passages, by aqueous drinks, to correct the putridity by acids, and to gradually induce elimination by appropriate mild laxatives, such as tamarinds and slightly emetized drinks. But this practice, by exasperating the phlegmasia, must induce prostration, hence, the secondary indication to sustain the forces by tonics, and as they almost always

found themselves reduced to this sad extremity, the fear of adynamia seized on all practitioners; putridity was forgotten, and nothing thought of but debility; this latter soon became the cause of the putridity, and the secondary indication was transformed into the principal. Purgatives being considered as debilitants, were replaced by tonics; the debility was thought to be seated in the vital principle, that is to say, in the whole economy, and the true seat of putrid fever, after having been clearly designated, was insensibly lost sight of, and at last wholly misunderstood.

It is thus that the fruit of observation becomes sterile, and that the sciences retrograde when they are deficient in a good theory. If the idea of the first seat assigned to the pretended fever in question had been persevered in, the cause of the irritation would have been transferred from the humours to the organs that produce them, and the inflammation of the internal membrane of the digestive canal would have been recognised as the principal disease. But, now that this truth is loudly proclaimed and supported by the most enlightened individuals, would there be any temerity in wishing to explain how the debility, stupor, fetor, fuligo, and lividity are produced in the disease in question; and is not the best mode of procedure, to ascertain if the group of symptoms that characterizes it may not be the result of all inflammations indiscriminately?

We think that to treat the question under consideration in a proper manner, that reference must be had to the normal state; it can first be established, that all the surfaces of relation are exciters of the economy, because they are furnished with vasculo-nervous expansions, which transmit stimulations produced by foreign bodies to the brain, which again reflects them through its nerves. This primary fact is undeniable, it is independent of the excitation resulting from already absorbed molecules, and does not militate against it.

If we now investigate which, among the surfaces of relation, is so constituted as to communicate the strongest stimulations to the brain, and consequently to the whole economy, we shall find that it is the internal membrane of the digestive canal. Two or three times each day, this surface urges the principle of innervation to very complicated acts, to satisfy the necessity of nutrition;

and, as soon as it is placed in relation with nutritive excitants, it transmits to this same principle another mode of stimulation, whose energy is well known.

It will perhaps be alleged, that the respiratory surface, charged with satisfying a still more pressing necessity, must exercise a greater stimulation on the brain. We do not think so, for the following reasons:—the necessity of respiration is doubtless more urgent than that of taking food; but the acts which are destined to satisfy it are less complicated; the external body required by this necessity is within reach of the organ: this body has a constant tendency to enter the organ, and an extremely simple muscular action suffices to cause it to enter abundantly. It is then sufficient that a sensation of a necessity for air solicits the instinct strongly, it would be useless for it to have much influence on the intellectual faculties and the locomotive apparatus; therefore it only causes great derangements in them when the respiratory apparatus is deeply affected; but even in this case, the stimulation becomes general in the viscera, and the gastric passages, which partake in it, concur with the pulmonary apparatus in deranging the functions of the brain. Let us now examine the necessity for taking food in the same mode.

In all animals that live in the midst of their nutritive materials, this necessity is as simple as that for respiration, and like this latter, it is satisfied solely by instinctive movements, a cerebral apparatus would be useless; it does not exist; but as soon as the animal requires extended, complicated, and combined movements to procure its food, it is endowed with a brain to direct these movements, and its stomach exercises on this organ an empire in proportion to the search, address, cunning, or force that is required by the animal to procure its food.

It must necessarily result from this mode of organization, that all irritations of the internal sense of nutrition will be reëchoed in the encephalic apparatus, that they will transmit their influence, not to the instinctive portion, but also the intellectual part of it; and that the more this latter is developed, the more will it be deranged, as well as the muscles, whose motions it directs and combines. It must hence result, that in man, the immediate object of our investigations, that gastro-enteritis will occasion more nervous

phenomena than in other animals, and this is, it appears to us, a truth that no one will deny.

Let us now examine the value of the symptoms that have been regarded as characteristic of what is termed putrid or adynamic fever.

The first is *stupor:* this results from an influence transmitted to the brain, an influence that renders the individual indifferent to what passes around him, and keeps him in a kind of half sleeping state. This influence originates in the mucous membrane of the stomach, which is gorged with blood, and in a peculiar grade of inflammation. All that augments this state increases the stupor; all that diminishes it produces the contrary effect. Our assertion is, therefore, proved by etiology and therapeutics.

Prostration.—This consists in an apathy of the muscular system, which produces immobility of the limbs, and gives the patient a tendency to assume the position or attitude best adapted for repose of the muscles; this attitude is lying on his back. Prostration resembles normal fatigue; it is, in fact, preceded and caused by a sensation of painful weight, which has been termed spontaneous lassitude, or weariness; it depends on the same influence as occasions the stupor, or in other words, stupor is a prostration of the mind, which is accompanied with that of the limbs in a greater or less degree.

When the gastro-enteritis, which occasions these two symptoms, has increased still more, the irritation and engorgement of the brain makes a similar progress; the stupor then changes to somnolency, with flightiness, vague hallucinations, slight delirium, and the painful fatigue of the limbs, which produced the prostration, is complicated with slight convulsive movements, as trembling of the tongue and lips, and subsultus tendinum.

Fuligo or fuliginosity.—This consists in the tongue and lips being covered with a blackish and often bloody mucosity, that has been compared to soot; this state is preceded by a shade of deep red, manifesting itself on these parts, and when this red has passed into brown, the fuligo begins to form. The black colour which characterizes it, often arises from an oozing of blood, which is mixed with mucus from the follicles of the mouth, and the saliva furnished by the adjoining glands. At the same time that

red colour of the tongue changes to brown, the muscles of this organ assume a convulsive state, that is, the tongue is retracted and pointed. It is at first dry and harsh, the fuligo does not form until the disease has made great progress; but sometimes this change is so prompt, that it is effected in the course of a few hours. In other cases it requires several days to be complete; it is always united with a livid tint of the face, and even of the whole skin, as if the oxygenation of the blood was imperfect. We think, that in fact, it is so, from the severe shock experienced by the cephalic and ganglionic nervous apparatus of the viscera, and from the internal membrane of the bronchia participating to a certain degree in the irritation of those of the gastric passages. Finally, it may be remarked, that these symptoms, as well as the two former, augment or diminish, are dissipated or reäppear, according as the internal membrane of the stomach and intestines is stimulated or calmed, heated or cooled, condemned to action, or permitted to remain as quiet as it is possible for it to be.

Fetor.—It only exists during life in the excretions; but it is important to ascertain those in which it is predominant. The abdominal cavity is considerably the most fetid region in the economy; it is even, in the normal state, the only one which is fetid, because it alone also is always in contact with animal or vegetable matters in a state of decomposition. In vain does the vital influence tend to modify this decomposition; it never is enabled to prevent it entirely except in the gastric region; but when absorption has deprived the chyme of the chylous molecules which it contained, the vital action of the mucous membrane of the large intestines, at all times much less energetic than that of the stomach, of the duodenum, and small intestines, is no longer sufficient to check the movement of decomposition, which acts incessantly on the residue. This movement is only checked by absorption, which deprives this residue of its moisture, but this does not prevent a continual disengagement of gas, which impregnates the peritoneum, and all the viscera covered by it, with its penetrating odour.

Nevertheless, these viscera do not suffer in the slightest degree from the impression of this gas so long sa they remain in a normal state, but as soon as this state no longer exists in the in-

ternal membrane of the intestines, as soon as irritation has augmented the mucosity, heated and super-animalized it, this humour, at all times fetid when it arises from a phlogosed membrane, becomes much more so by the putrefaction of the residue of digestion; hence the production of a fetid gas, which exhales by the mouth, and penetrates all parts of the body. There is no doubt that it may be neutralized in the circulatory vessels, but it reäppears in the urine and cutaneous transpiration. Why does it not abound in the small intestines, when a sanguinolent mucosity, bile, and even pure blood, is accumulated on their internal membrane, and when these matters remain in a focus of so elevated a temperature, and always accessible to the external air?

It is only in the vessels and proper tissue of the organs that the vital influence can prevent spontaneous decomposition. All the extravasated humours become decomposed, some in dividing into two portions, one of which coagulates in attaching itself to the organs, the other, half fluid, remains in this form, or disappears by resorption; such are effused blood, and some products of inflammation, accumulated in serous parts. The others pass into putrefaction, like the pus of phlegmons; but as soon as atmospheric air penetrates into the foci which contain these humours, it accelerates their decomposition, and causes them to contract an excessive fetor.

Why then need we be surprised that putridity is associated with acute inflammations of the digestive canal? Truly these affections should be putrid diseases *par excellence.* They can only be compared to putrid suppurations with resorption; such as fistulous abscesses arising from large phlegmons, which penetrate deeply into the thickness of a part, and which furnish a copious and fetid suppuration, the greater part of which is resorbed, but here the causes are evident, and the diseases which produce these purulent resorptions are not apt to be confounded with those fevers termed *putrid idiopathic.*

Whenever then putridity manifests itself in an acute disease without our being able to attribute it to the putrefaction of a purulent abscess, it is already very probable that it depends on a gastro-enteritis; but when the other symptoms of this disease are found united with it, there remains no doubt of the proximate

cause of the fetor of the excretions, and this fetor necessarily becomes one of the characteristic symptoms of the disease in question.

Examples of putrid fevers have been cited, occasioned by collections of fetid pus, which were not discovered until after death. We fully believe that such a cause may keep up a febrile state, with prostration and fetor of the excretions; but either the fuligo, the stupor, and the predominant heat of the abdomen, are wanting, and then the group of symptoms does not correspond to the putrid fever of authors, or these symptoms do exist, and in this case the primary inflammation is complicated with gastro-enteritis. Now, this complication is not rare; it may even result from the simple resorption of the fetid pus, for this pus here acts like a septic poison, and it has been constantly observed that the absorption of all poisons developes irritation in the internal membrane of the digestive canal.

Hence, to recapitulate, the union of stupor, prostration, fuligo, lividity, and of fetor of the excretions, constitutes the group of symptoms to which authors have consecrated the title of *putrid or adynamic fever*, and this group is also that which gives us the diagnosis of an acute inflammation of the mucous membrane of the digestive canal raised to its highest degree of intensity: it is what in physiological medicine we designate by the words gastro-enteritis passed into adynamia.

From what we have said, it is evident that typhus fevers can only be acute gastro-enterites of the highest grade: they unite, in fact, all the characters of sporadic, putrid, or adynamic fevers, and only differ from them in their cause. Now, this cause is a putrid miasma, that is, a gas arising from the decomposition of organized bodies; this cause then has the strongest relation to the gas which is formed in the interior of phlogosed intestines, a gas which also produces, as we have seen, a real miasmatic poisoning.

Hence it may be established, that, in a great number of cases, the individual poisons himself by the putrid foci which have been developed in his organs by inflammation, and that in others, he is poisoned by emanations from putrid foci foreign to himself. To the first case are referrible not only the adynamic states

produced by acute gastro-enteritis, but also those that depend on great internal suppurations, whose pus, in a state of putrefaction, is incessantly resorbed, and equally fetid external suppurations, like those of small-pox, &c. To the second case may be referred yellow fever, the plague, and all other typhus fevers arising from miasmata disengaged by the putrefaction of organized bodies in the open air, and fevers of a bad character occasioned by emanations from healthy or diseased living animals, shut up in too confined a situation, and even those which are induced by the emanations from a single patient affected with typhus, when these emanations are copious, very virulent, and absorbed by an individual eminently predisposed.

It may be said that we admit the febrile contagion of one individual to another, at a time when most physiological physicians are eagerly denying it. This merits some distinctions.

After having established as a principle, that putrid miasmata, from every source, can produce the group of symptoms to which the name of *typhus* has been assigned, we affirm, on experience, that it is but rarely that a single patient can furnish miasmata sufficiently active and copious to poison many healthy persons; but the same experience forces us to admit that there are cases where this poisoning can take place in a few individuals, and especially in those who approach near the patient, who receive and inhale his breath; especially when cleanliness is neglected, and the patient has neither had his linen changed nor been sufficiently ventilated, and they allow him to wallow in his excretions, in too confined a situation, and out of the influence of the external air. We will admit that this kind of infection, to which the name of *contagion* has been given, is not common, because a single patient is rarely a very virulent focus, but we shall avoid denying its possibility; facts will tell against us, and we are the slaves of facts. The contagionists are as amply provided with them as their adversaries, and a thousand negatives cannot destroy one affirmative fact. We shall limit ourselves to saying that this kind of infection is readily prevented, and that a single patient in a healthy situation and properly attended can never be the cause of an epidemic.

After having shown how the adynamic or typhoid state is con-

nected with gastro-enteritis, we are lead, by the terms of Proposition CXXXVIII, to ascertain in what manner the nervous, ataxic, or malignant state may be the result of it. Its symptoms termed nervous *par excellence*, as well-marked convulsions, tetanic rigidity, permanent delirium, more boisterous than that of the typhoid state, exempt from any admixture of stupor and somnolency, suppose that the brain is excited in a different manner from that appertaining to typhus or febrile adynamia. At the same time, this mode may, like the last, be the consequence of a gastro-enteritis. In both there is a transmission of irritation to the brain; but that of the typhoid mode is accompanied with a greater sanguineous engorgement, a sort of narcotism, which does exist in the second. The convulsive movements and the delirium of the typhoid mode are those of a drowsy man; the convulsions and delirium of the ataxic mode are those of a man too much excited; how then can these two modes depend on the same cause, can they be the result of the same sympathetic influence? It is known that in general, exciting causes out of the question, the brain is subject to these two modes of excitation.

There is always in cerebral irritations excessive wakefulness or sleepiness. The difference would appear to depend, in many cases, on the mode of irritation, and the more or less ready return of the blood into the circulation. If the irritation is without engorgement, the patients are wakeful, but if it accumulates blood in the cerebral substance, somnolency replaces insomnia. This succession may be daily observed in the disease in question; we often see patients after several days of wakefulness suddenly fall into the comatose state, when the congestion is formed, and reciprocally, we observe cases where the congestion which existed from the commencement having been destroyed by bleeding, that insomnia takes the place of the comatose state.

If we would determine the proximate cause of the adynamic and ataxic symptoms from these data, we would say, that the sanguineous engorgement of the mucous membrane of the gastric passages first induces that of the brain, and thus causes adynamic stupor and prostration; that if the cerebral irritation, at first produced by that of the gastric mucous membrane, passes into the painful inflammatory mode, and causes a revulsion of the sangui-

neous engorgement of the epigastric region, somnolency disappears, to give place to delirium, convulsions, and insomnia; but that, if nevertheless, this cerebral irritation is not destroyed, it finally produces a congestion or effusion, and brings back the comatose state, which, in this second case, is much more to be dreaded, and is almost always fatal.

This explanation appears sufficiently plausible in cases where the brain and its membranes are really in an inflammatory state; but how many patients are there, who, although having presented the most ataxic appearance, exhibit no trace of inflammation on a post mortem examination, and whose brains exhibit nothing but a sanguineous engorgement, a serous infiltration in the pia mater, or a slight effusion of the same nature in the arachnoid, whilst the mucous membrane of the gastric passages bears the most evident traces of phlegmasiæ.

Since it is not possible to attribute all the ataxic symptoms that supervene during the course of acute gastro-enteritis, to a real inflammation of the brain and its membranes, we can here discover nothing more than a sympathetic effect of the phlegmasia of the mucous membrane of the stomach and small intestines, that is, a modification produced by the same cause that occasioned the adynamic phenomena. In the adynamic, as in the ataxic state, the brain is excited by the gastro-enteritis, here is the resemblance. In the first it is accompanied with stupor, somnolency, and prostration, whilst in the second it is attended with convulsions, delirium, obstinate wakefulness, and exaltation of the sensibility, here is the difference. Since it does not necessarily depend on cerebral inflammation, what does induce it? Does it arise from a particular grade of inflammation of the intestines? For this to be the case, the ataxic state should never be associated with gastro-enteritis, accompanied with great heat in the abdomen; for it is this grade that necessarily induces putridity, if it lasts for some days. We have often remarked, that the ataxia coëxisted with gastritis during the first days of the acute state, that is, as long as irritation predominated in the upper part of the canal; but in a few days, stupor persisted with fetor, and the nervous phenomena were found to be in some degree weakened by the adynamic complication. Would not this arise

from the inflammation, in extending itself in the intestines, having produced a higher degree of alteration? Such are the facts to which it is beneficial to invite the attention of observers.

We have often had occasion to remark, that those patients who presented the most violent ataxia, such as furious delirium, with prodigious exaltation of the muscular strength, exaggerated sensibility of the organs of sense, after excesses in spirituous liquors, or from any other exaltation of the digestive passages, had little febrile heat, scarcely any pulse, a very depressed abdomen, and its muscles strongly contracted—certain signs that a phlegmasia with congestion of fluids in the mucous membrane did not exist. When these patients expired in a few days, from the violence of the nervous state, we have verified, in fact, that this membrane, although red, was dry, and that the intestines were contracted; the examination of the cranial cavity then became very interesting; but when, at the same time, nothing was observable in it except injection, density, and renitence of the brain, dryness of the arachnoid, without any exudation, was it not evident that the brain had been excited by the phlegmasia commencing in the digestive canal? Certainly, and we have every reason to believe that if such patients had lived longer, the afflux of humours to the phlogosed mucous membrane would have been effected; alteration of this membrane would have occurred; putridity, stupor, and prostration would have followed, and the adynamic form would have taken the place of the ataxic.

What confirms us in this view of the subject, is, that we have seen patients die, whether they had been excited by antispasmodics, or been debilitated by copious bleedings, during the ataxic state under consideration. The first perished because the nervous state had been exalted by adding to the super-irritation of the gastric passages; the second owed their death to the debility, always induced by a great loss of blood in patients exhausted by excessive convulsions; for it is never prudent to draw blood from a patient who has been in a convulsed state for several days, when the pulse is very small. After having made this remark, we determined to treat these ataxic fevers from the commencement of the febrile state, by cold or tepid baths, and emollient drinks only. The event has justified this practice; for, in

a few days, we have seen the convulsions and delirium diminish, the pulse and febrile heat develope themselves, the thirst and other signs of gastro-enteritis become manifest; some of our patients became convalescent, others remained in a febrile and delirious state. It is then that, equally dreading encephalitis and adynamia, we have had recourse to local bleedings from the head or abdomen; and these losses of blood, which might have been fatal during the spasm, were then advantageous and induced a prompt and fortunate termination to the disease, whenever the mucous membrane of the digestive canal had not been disorganized by a chronic phlogosis anterior to the acute state.

Nothing that we have said on ataxia consecutive to gastro-enteritis, militates against primitive ataxia; irritation of the brain equally presides over both. This is the most favourable moment to state what we have learnt as regards the symptoms and progress of these two kinds of ataxia; we will rapidly compare them, and thus complete what we intend to say in this work on the determination of the characters of febrile nervosity.

By far the greater number of phlegmasiæ of the brain are, at their commencement, as we have already said, only sympathetic irritations arising from phlogosis of the stomach, irritations which, from not having been treated at the proper time, are transmitted to the vascular net-work of the pia mater, and to the arachnoid, where they assume the character of phlegmasiæ; others are the effect of external violence, of circumjacent phlegmasiæ, and these may sometimes attack even the substance of the brain. There are some that arise from moral affections, for, although the passions exercise much influence on the digestive organs and heart, they may sometimes produce inflammation only in the brain and its membranes; these organs may also receive irritation by metastasis, from another part, &c.

The brain, irritated from one or other of these causes, always commences by inducing disorders in the nerves of relation. When observed at the moment of their appearance, these disorders evince nothing but irritation of the brain, they must necessarily become continuous and predominant over every other kind of lesion before we are entitled to suspect a real phlegmasia. If they are solitary and very intense, the phlegmasia is demonstrated, but in cases where

the phenomena are induced by a gastro-enteritis, they cannot be attributed to inflammation of the brain and its membranes whenever they vanish and reäppear with the primary disease. It is thus that we daily see subsultus tendinum disappear on an application of leeches to the abdomen, and return on the ingestion of some broth. But whatever may be the determining cause of the encephalic irritation, the persistent tetanic convulsions, the violent and obstinate pains in the head, whether local or general, the loss of some sense, the paralysis of certain muscles, the profound coma, the hemiphlegic state, the apoplexy with paralysis, the imbecility, the habitual sensation of weight in the limbs, and the impossibility of locomotion, are positive symptoms of a phlegmasia of the brain; in other words, these symptoms indicate that the irritation of this apparatus has produced an alteration of its texture.

We have stated it to be necessary, in order to draw this diagnosis, that the symptoms above enumerated must be permanent; for every irritation of any intensity may produce those symptoms by the sole agency of the afflux of blood and the congestion that results from it, and as long as this congestion has not compromised the texture of the brain or its membranes, the disease is curable, or if the patient dies, none of the derangements usually attributed to inflammation are to be found, which amounts to saying, that a complete cure is impossible where there is a real inflammation of the brain.

What is now to be done? must we give the name of phlegmasia to all affections of the brain, without waiting for the manifest symptoms of an alteration of the texture of this viscus? If this course be adopted, all hemicranias, and all cephalalgias, will be inflammations, and whenever a patient shall have suffered in his head, or presented either convulsive or comatose phenomena in an acute affection, it will be affirmed that he had an encephalitis or an arachnitis, when even the post mortem examination shall only present a moderate sanguineous injection, or a small serous effusion on the surface of the arachnoid, with a very slight opacity in some points only of this great serous membrane.

Must we wait for the persistence of the symptoms, and of the

signs of organic alteration, before pronouncing that the inflammation is real? Then the indication for antiphlogistics will come too late.

Shall we make different divisions of the cerebral symptoms, calling some nervous, and others inflammatory, and giving to others again names derived either from the mode of the exterior lesion, as paralysis, apoplexy, insanity, catalepsy; or from the alterations found after death, as softening, induration, medullary sarcoma, cancer, &c. These divisions, besides being wholly arbitrary, would lead practitioners to recur to a practice which has been pursued too long for the welfare of mankind, that is, to oppose only insufficient means, sometimes even directly prejudicial to the internal physiological modification, which produces the apparent lesions. This ontological and superficial method would speedily induce practitioners to again employ bleedings in cerebral affections, only in cases of plethora and strongly-marked fever, for it would only be in these cases that they would dread inflammation, and to give time for moderate or chronic irritation to accomplish the disorganization of the most important of all our viscera; it would again cause them to exasperate the irritation of the organ which has sympathetically disordered the functions of the brain, by pretended specifics, or badly chosen derivatives, it would lead them, to the great scandal of the learned, who hope to see medicine assume a rank among the exact sciences, to wait for the epoch of incurability to recognise the disease with which the brain is attacked, and to deduce their diagnosis from the agonies of death.

We are of opinion that there exists but one single method of escaping all these shoals; which is to view the facts as they are, and to state them without prepossession. Thus, whenever the brain suffers, whenever it excites the sensitive or locomotive and intellectual functions too strongly, it may be said, without fear of error, that it is too much irritated, or super-irritated, that it invites too great an afflux of fluids, and that it is menaced either with engorgement, extravasation, suppuration, softening, or induration, or any other mode of abnormal, and consequently, vicious nutrition. It remains to seek for curative indications, and physiology teaches us to find them either in the primary

stimulation of the brain, or in that of an organ reäcting too energetically on that viscus. In all lesions of the centre of our relations, the practitioner ought to have a prospective view of insanity, stupor, degradations of the organs of sense, epilepsies, paralyses, and apoplexies; it is the best method of rarely meeting with these deplorable affections, which are only the signal of a disorganization that seldom occurs without having been prepared and announced by unequivocal symptoms of super-irritation of the encephalic apparatus.

PROP. CXXXIX.

All the *essential* fevers of authors are referrible to simple or complicated gastro-enteritis. Authors have not recognised this phlegmasia when it is unattended by local pain, and even when pain was present they have considered it as accidental.

This proposition is one of those to which physicians of the old schools have most strongly objected. Without attempting to examine its meaning, they have declared that it is too exclusive. The idea of seeing nothing but inflammation of the gastric passages in fever, shocked them; they at first exclaimed against its absurdity. In afterwards reflecting on it, they fully admitted, at least the most reasonable among them, that there were no fevers without the affection of some organ; but they have refused to admit that this affection is always a gastro-enteritis. We have replied to them by taking a survey of the acute phlegmasiæ of all the organs, and comparing them with the febrile state.

Have you, we have said to them, given a name to inflammations of the skin, to those of the cellular tissue, muscles, articulations, brain, throat, larynx, lungs, and its different tissues, heart, liver, peritoneum, kidneys, uterus, bladder, colon, and rectum; to phlegmons of the cellular tissue of the visceral cavities; to phlegmasiæ of the vascular apparatus? The reply must be in the affirmative; it suffices to glance at the different nosologies to be convinced of it, but men who are afraid of being convinced have not done this; let us then do it for them; let us say

that all these inflammations are designated, severally, by a special denomination, to which is associated the group of symptoms that characterize them, and that the accompanying fever is considered as the effect of them. Now let us add, either you give the name of essential fevers to fevers, depending on these phlegmasiæ, or you do not give them this name. If you bestow it on them, you contravene your own principles, since you profess that every fever produced by the inflammation of an organ is not essential; if you deny them this title, your essential fevers are not dependent on any of the phlegmasiæ we have just enumerated, and therefore to characterize them it requires other symptoms than those of these same phlegmasiæ. It now remains, we have added, to examine the value of the symptoms which attest the existence of your essential fevers; now I enumerate these symptoms, and I find that they are precisely those of inflammation of the mucous membrane of the digestive canal from the stomach to the colon.

"But say you, we are acquainted with these phlegmasiæ, and you will find gastritis and enteritis in our nosological tables, as you will also find there pleurisy, peripneumony," &c. To this we have replied: you describe gastritis, but you only indicate the most violent, and you confound it with other diseases. You speak of enteritis, but in your descriptions we recognise other diseases; for example, peritonitis. Moreover, you give us real gastritis as a disease independent of inflammation of the stomach, under the names of cholera morbus, black vomit, gastralgia, pyrosis, &c. You describe to us, without knowing it, true enteritis, under the names of absolute nervous fever, mesenteric fever, tabes mesenterica, &c. In all these cases you do not admit the essentiality of the febrile state; but you are mistaken on the nature of the affection of the organ to which you attribute this febrile state. We conclude from this that you are not acquainted with the inflammations of the mucous membrane of the stomach and small intestines.

Nor content with having convicted you of ignorance on this first point, we return to the valuation of those symptoms of fevers for which you have reserved the title of essential; and this new examination proves to us that these symptoms belong to these

same inflammations of the digestive canal, which you have already misunderstood under other forms. Prove to us that we are in error, that your bilious, gastric, mucous, nervous, ataxic, adynamic and putrid fevers, that your burning fevers, your yellow fevers, your typhus, your simple synochus or inflammatory fevers, are not these inflammations of the digestive canal. We will then cheerfully submit, but do not tell us that these fevers may depend on any other inflammation than that of the digestive passages, for we shall recall to your minds the concession you have made; we shall say to you in fact, if this fever, which you call inflammatory, and which you believed was essential, until post mortem examinations revealed inflammation to you, depends on a pneumonia, a catarrh, a cerebral phlegmasia, or that of the blood-vessels, it is not an essential fever, it is an inflammation which you have overlooked, although the characters which distinguish it, were according to you, clearly expressed in your nosologies. If this adynamic fever is the effect of an occult suppuration which you will discover after death, it is not an essential fever, but a phlegmon of whose existence you had no suspicion. If this mucous fever has been kept up by a combination of phlegmasiæ of several viscera, it is not an essential disease, it is a mixture of several phlegmasiæ which you erroneously combine into a single disease to form a particular entity.

On the other hand, what do you wish that we should think of your judgment, when you tell us of diseases composed of an essential fever, that is, which has no local cause, and of a catarrh, a gastritis, or of a dysentery? Are you enabled to demonstrate that the fever which according to you may be produced by the catarrh, the gastritis, or the colitis, is not here the effect of these phlegmasiæ, and that these are only accidental or a complication of this fever?

Finally, how will you extricate yourselves when you tell us that the redness of the alimentary canal and the other traces of inflammation that we find in bodies are the effect of the essential fever, you who have at another time admitted that inflammations of organs may produce the fever. Do you not allow that the red induration and softenings of the lungs are traces of a phlegmasia which has produced the fever? do you not make the same avowal

respecting redness of the peritoneum, that of the skin, eyes, throat, &c.

Thus you are now reduced to deny that gastro-enteritis is the cause of fevers which present no other trace of inflammation than redness of the digestive canal, to maintain that this redness is the only one which may not be inflammatory and which may not have the power of keeping up the febrile state!

You think to triumph when the bodies you examine present you with a brown or black colour instead of red in the stomach and intestines; well! can you deny that this same colour equally succeeds to redness in all the other organs, when the phlegmasia has been much protracted?

Such are the questions on which we have for a long time past treated in different works on the physiological doctrine. We have united and condensed them in this commentary, to facilitate a knowledge of them to persons who really wish to learn them. What we have said is sufficient to justify Prop. CXXXIX, especially if it be connected with the developments which were given of that which precedes it.

PROP. CXL.

Authors have sometimes admitted that certain fevers depend upon an inflammation of the digestive organs; but they have never maintained that the pretended essential fevers could arise from no other cause, nor that they were produced in the same manner as pneumonic fever, &c. nor finally that there were no essential fevers. All this has been maintained only since the promulgation of the physiological doctrine.

" No, the reasonings which have already been often employed by physiological physicians, and which have been just recapitulated, have never been made use of by writers ignorant of this doctrine. It had been said, that the digestive organs were often inflamed in many continued or intermittent malignant fevers; but the entity

fever always remained as the cause of the inflammation, both in epidemics, or in the particular case in question, and had a tendency to associate itself with other analogous entities, which were not destroyed and which served as a safeguard to it. In France, it was attempted to explain the essential fevers of nosologists, by different modes of being of our organs, but not to destroy them by referring them to inflammation. It is thus, that some wished to reduce bilious and gastric fever to an irritation of the secretories of the bile, mucous fever to an irritation of the follicles of the digestive canal; adynamic fever to an irritative affection of the muscular fibres; inflammatory fever to an irritation of the exhalant orifices and sebaceous follicles; whilst others, often having paid much attention to the sanguineous engorgement of the digestive canal, did not hesitate to attribute adynamic fever to a retrocession of the blood from the vessels of this same canal, and therefore justified the incendiary treatment advised by Cullen and rendered universal by Brown.

One thought that all diseases were particular irritations of the lymphatic vessels; another pretended to class them from the lesions of vital properties, and to succeed in this, erected these properties into as many powers, which had dominion over all the organs.

In Germany, all fevers of a bad character were referred to a lesion of the nervous system, and this lesion, according to some, was debility, whilst, according to others, it was a phlegmasia attacking the brain and spinal marrow. In Italy, they spoke of general diathesic affections, of *processus* which generalize diseases primarily local. The Italian physicians of that epoch had greatly reduced the number of the asthenic diseases of Brown; but they treated their hypersthenic fevers, become more numerous, by purgatives, by alkalies, by narcotics and digitalis; means which they intermingled with bleedings, emollient drinks and the application of cold, tending precisely to the same end, a certain proof that they had no idea of the real state of the internal membrane of the gastric passages. Moreover, their bleedings, always made from the large vessels, never practised on the principal focus of the inflammation, fully prove that this focus was unknown to them. They attacked asthenic diathesis, which they placed, nobody

knew where, by modifiers which they imagined as fitted to destroy it, when they only augmented it; they introduced these modifying agents into the stomach, and figured them as acting every where else than on the stomach.*

Where then was the idea of the pathological state of organs, which correspond to the essential fevers of authors? It is not met with either among contemporary or ancient classic writers: always imaginary modifications of the organism; always inexplicable entities; no connexion between acute and chronic diseases; the economy was subjected to a host of abstract tyrants, and no where was there to be found a natural modification founded on the anatomy and irritability of organs. The only physicians who did exclusively adhere to humoralism were disguised Brunonians, who attributed the same disease sometimes to an excess of the general force of the body, sometimes to debility, or else were ontologists, who pretended that the morbid entity could only be characterized by its progress, its duration and its termination, and hence, who subjected themselves to the alternative, either of treating a disease before it was ascertained, or of waiting for its termination to decide what might have been done to treat it properly. "Wait, say these pretended anylists; during the precursory uneasiness of acute diseases, wait till the disease has declared itself; would you wish to attack your enemy before knowing him? Give a shock to the economy; administer an emetic: if you have only to do with a gastric embarrassment, your patient will be immediately cured; but if it is a gastric fever that menaces him, it will be unmasked, and you will know what you are about." Was the gastric fever unmasked; were the heat, the thirst, the cephalalgia, the internal burning insupportable, they said to you,— "Beware of drawing too much blood; what do you know certain respecting the turn that this disease must take? You believe that you have only a gastric fever to treat; perhaps adynamic fever is hidden under this illusory appearance, and only waits the sanguine emission which you propose to practice, to discover itself. Preserve therefore to your patient, the forces necessary to sustain the burden

* See the case of the daughter of Tommasini. Journal Universel des Sciences Médicales, XVI, page. 73.

of the evil, and do not expose yourself to the necessity of administering bark and wine to-morrow to restore the forces you will have removed to day." Sometimes even they pushed precaution so far as to give tonics before the appearance of the debility, which they presumed would soon declare itself.

Other physicians paid more regard to the character of the epidemic, and the prevailing constitution, than to the classifications of nosologists, and pretended that a fever could not be well understood without several others of the same season had been observed throughout their whole course. These practitioners have often been heard to say, that the stationary or intercurrent fever impressed some of its characters on all other diseases reigning at the same time with it; and Sydenham traced diagnostic rules, founded on analogy, to direct the conduct of practitioners when a new fever presented itself.*

But why recur to physicians of former ages? Do we not constantly observe the appearance of new fevers? Do not the journals every year present accounts of epidemics, the authors of which assert that the fever observed by them did not resemble any of those hitherto described? It was because they had closely examined these fevers, because they had noted all the symptoms, all the minutiæ, and all the peculiarities occasioned by idiosyncrasies; because they had thus obtained a more highly finished picture, that they misunderstood the ground-work of it, that they discovered no characteristic traits in it, found no similarity in it to their models, and really believed that they had met with a new fever.

Now, if they had possessed precise ideas on the principal cause of fevers, on their real complications, and on the individual peculiarities which may occasion differences of a secondary importance between cases essentially identical, medicine would not have to blush at all these follies. Let any one at the present day attempt to invent a new fever, and it will be seen with what facility physiological physicians will reduce it to an inflammation of the viscera: if that of some other organ than those of digestion is the cause of it, this cause will soon be appreciated; the

* Schedula monitoria de novæ febris ingressu.

symptoms which belong to this phlegmasia will be immediately pointed out; those which depend on the digestive mucous membrane will be attributed to it; anterior exciting causes will be carefully sought for; they will be distinguished by the irritations which they will have occasioned; a special entity will not be formed of a union of them, as was practised until the epoch of the physiological doctrine, and the disease, whatever it may be, will not remain among the essential fevers. Something new will be discovered respecting the activity of certain modifiers, of certain exciting agents on the kind of affinity that directs to one organ rather than to all the others; the influence of this or that curative plan, will perhaps be better appreciated; but a new fever will not have been discovered, an entity, hitherto unknown in the annals of our diseases, will not have been created; and we shall no longer hear, as a consequence of this pretended discovery, the periodical works resound with the reclamations of this or that learned man, who may have discovered an account of it in some old book. If any one still persists in this obsolete language, his work will be peaceably laid on the shelf, and will not excite the choler of really erudite physicians.

PROP. CXLI.

Authors being ignorant that the internal membrane of the small intestines could be inflamed without causing local pain, have all ascribed to enteritis the symptoms of peritonitis.

We ought to have added *and often those of colitis*, as otherwise the gastro-enteritis would have been known.

PROP. CXLII.

It is by an acute gastro-enteritis, the primary effect of the contagious virus, that small-pox makes its first appearance. Cutaneous inflammation replaces the gastro-enteritis, and puts an end to it when the pustules are few in number; but

if the pustules are numerous, the erysipelas which results from the confluence of the areolæ reproduces the gastro-enteritis. This is the *secondary*, or, as it is also called, the *suppurative fever* of small-pox.

Nothing is more vague and less satisfactory than the theory of small-pox, as it existed before the era of the physiological doctrine. The ancient humoralists may be pardoned for having considered the fever, the precursor of the eruption, as the effect of a fermentation of the humours, produced by the variolous miasm, without any predominant visceral affection, and the pustules as a sort of despumation: but in classing this disease among the cutaneous phlegmasiæ, the moderns deprived themselves of this explanation: if all the symptoms are the effect of the inflammation of the skin, how is it that fever constantly precedes them? Such was the question that was perpetually asked. They were obliged to suppose a preparatory operation of the vital principle, which, intending an eruption to diminish the poison, overturned the whole economy to produce it. But, in this hypothesis, where was the poison? Some supposed it in the skin, whence it acted on the sanguineous system before having affected even the skin itself; this supposition needs no reply. Others located it in the blood, after the manner of the ancients; but then the small-pox no longer remained in the class of cutaneous phlegmasiæ: it was a wholly humoral disease, in which the inflammation of the skin was only a secondary phenomenon.

Our doctrine has taught, that the poison, absorbed by the skin, or any other surface of relation, is primarily carried towards the visceral centre, and exercises its first action on the internal membrane of the stomach and small intestines; that it there developes a real inflammation; to which succeeds that of the skin, through the medium of reäction.

By this mode of considering the phenomena, every thing is explained that can be explained, and indications for the treatment are procured. But let us proceed to facts: it will never be known why a variolous poison exists, what is its first source, what are its chemical elements, and why this agent must produce pustules of a determinate form on the surface of the skin. These are myste-

ries depending on first causes, and which cannot be revealed to us. But a vast number of analogous facts may be observed, and these facts demonstrate the existence of a law, which enacts that poisons, which are not sufficiently active to produce sudden death, exercise their first sensible attack on the visceral apparatus, and principally on the internal membrane of the stomach and duodenum; that the ordinary symptoms of irritation of the internal surface of these organs is developed; that a febrile action is excited, and that afterwards the irritation is transmitted to the depurative organs, and terminates by evacuations. In fact, if putrid sanies is injected into the veins of animals, it first affects the stomach, developes a febrile action, and finally, produces vomiting, alvine evacuations, a discharge of urine, salivation, and even sweat; we have seen the acetate of morphia produce all the evacuations at the same time; and every one knows that the putrid vapour of dissecting rooms often causes febrile actions with gastric irritation, which terminates by sweats, &c.

This first order of facts being known, it still remains to explain why one poison excites an abundant secretion of mucus and bile, whilst another causes sweat, a third a copious discharge of urine, many others cutaneous eruptions, and why these eruptions differ from each other. But if these particulars are not known, the general fact is: it may be compared with others, and thus information may be obtained respecting the mode of formation of several of the visceral phlegmasiæ. For example, if an individual is exposed to the sudden action of cold when he is in a state of perspiration from the effect of violent exercise, it often happens that this individual will experience uneasiness, irritation in the stomach, thirst, and distaste for food, with continual pains in the limbs, and cephalalgia. Fever is soon developed, and after lasting for some hours, it terminates by an abundant sweat, and often by a pustular eruption around the lips. If this series of phenomena occurs but once, it is called ephemeral fever; if it is repeated in a periodical manner, it is an intermittent fever; but the modification of the economy is the same in both cases, as the cause—the action of cold is also the same. From a fact of this nature, compared with the preceding, can we avoid believing that the irritation is first transmitted from the skin to the viscera, and that the latter gets rid of it by transmitting it back again

to the secretories? But when in place of a similar termination, a bronchitis, a pneumonia, a pleurisy, a gastritis, peritonitis, &c. supervene, is it not correct to say, that the viscera have preserved the irritation which had been transmitted to them, and have been unable to reflect it on the secretories? and does not this explain why external influences, which produce paroxysmal fevers, at the same time always occasion phlegmasiæ?

If the external cause of the morbid state differs in many of the cases we have spoken of, at least it cannot be denied that the law of reäction is always the same, and that it is sufficiently demonstrated. We always see development of irritation in the visceral apparatus, a tendency in this irritation to reäct on the secretories, and to be dissipated in proportion as they act and eliminate fluids. But we equally see manifest danger, on the one part, that the irritation, become too energetic in the viscera, cannot be there converted into a phlegmasia, or disorganize them, and on the other hand, that the action of the secretories may not undergo the same transformation, and compromit, first the structure of the excretory organ, and afterwards by its return towards the interior, renew the irritation in the viscera.

These facts being known, whatever may be their first cause, the part of the physician is clear; he should permit the reäction, if not too great, to freely establish itself; but he should diminish the irritation of the viscera, by antiphlogistics, when it once attains the inflammatory grade, and that of the periphery, when having become too intense, it menaces the destruction of the organs in which it is seated, or tends to reäct in a vicious manner on the viscera. Moreover, there are cases, and these cases are relative to the cause, where the exciting agent of the evil should be eliminated or neutralized; but this indication is not that of small-pox, which particularly engages our attention at present; what controul have we over a subtle poison, which never announces its presence until it has already developed inflammation in the principal viscera? The antiphlogistic indication is here then the principal; it is fulfilled in cases of benignant and distinct small-pox, by limiting ourselves to the abstraction of stimulants; and in severer cases, by combating the phlegmasia both in the internal and external regions, if it becomes viciously predominant. Thus, when the confluence of the areolæ, which surround the

pustules on the face, menaces an erysipelas of the skin, the progress of this latter is arrested by a local bleeding and emollient fomentations; and gastro-cephalitis, ophthalmia, abscesses, &c. are prevented. It is with the same intention that some physicians have tried the cauterization of the pustules on the face, a procedure which sometimes succeeds at the moment of the eruption, and which often exasperates the phlegmasia it was wished to arrest. Certainly, they would never have thought of employing such means, if the danger depending on the reäction of the cutaneous phlegmasia on the viscera had been pointed out to them. Sydenham has treated the subject in a general manner, but the physiological doctrine has particularized it, and in giving the *wherefore* of the symptoms of the different stages, and the effects of different modes of treatment, has given a reality to the theory of small-pox.

The revulsive indication may sometimes present itself; for instance; when it is necessary to invite the irritation which continues to predominate in the viscera, at a period when it should have left them to the skin. All therapeutic means belong to one of these three divisions, and the science could not have reduced them to this degree of simplicity, before it possessed the precious data afforded to it by the physiological doctrine, and which are contained in Prop. CXLII.

We must not, however, neglect noticing the resorption of the pus, with which the cutaneous surface is covered, at the epoch of the secondary fever, during confluent small-pox, for this pus is a new cause of visceral irritation. But at all events, it is not the principal one, the pus is resorbed without injury, whenever the inflammation which produced it does not suddenly abandon the skin, but gradually abates in it, and the urine would furnish this humour with a channel of elimination, which is attended with no inconvenience. It is then the inflammation, over which the practitioner should watch, to prevent it from becoming excessive in the tissues that it must necessarily traverse, or as it were, overflow to attack other tissues, as the cellular, the serous membranes, the parenchymata, and the brain.

After having studied these important considerations, it may be demanded, what is meant by those who made the whole essence

of small-pox to consist in the virus, or who dare to maintain that physiological physicians see nothing in this disease but an ordinary gastro-enteritis.

PROP. CXLIII.

Rubeola and scarlatina commence with gastro-enteritis, and by an acute catarrhal inflammation of the eyes, schneiderian membrane, throat or bronchiæ. These phlegmasiæ constitute all the danger of those diseases, by becoming exasperated, attacking the brain and all the viscera. The angina of scarlatina often becomes fatal, and attention ought to be bestowed on the bronchial catarrh of rubeola, which occasions from the commencement, puriform expectoration, and which, when it is not converted into pneumonia, may produce strangulation by intercepting the passage of air.

That there exists in the atmosphere, at certain periods in the year, a particular principle, a sort of poison, which first attaches itself to the conjunctiva and nasal fossæ, inflames them, propagates its action to the mucous membrane of the respiratory apparatus, afterwards affects that of the gastric passages, and produces fever, and finally fixes itself upon the skin, to develope there a superficial phlegmasia, which gives the disease the name of measles; or that all these inflammatory phenomena are the effect of a miasmatic virus, which is only transmitted from one individual to another, either immediately or after having remained in some substance capable of retaining it without depriving it of its contagious property, it is never this cause that the physician is called on to modify, but his whole attention should be fixed on the inflammations which result from it.

You will remark here, that the foundation of the theory is the same as in small-pox. It is not the phlegmasia of the skin that constitutes the fundamental phenomenon; the fever precedes this inflammation, which moreover, is not of much importance, and

this fever originally depends on a phlegmasia, which, from being more connected with the surface of the body than that which precedes the variolous eruption, is more readily distinguished by the observer. He sees in the first place, uneasiness, dedolation, with a slight disorder of the pulse, phenomena inseparable from ordinary coryzas, which are somewhat violent, and which constitute a commencement of the febrile state; hoarseness appears with cough, and all the sympathies become more marked; afterwards the fever occurs with more violence, but then the want of appetite, the redness and contraction of the tongue, the thirst and the augmentation of the sensation of fatigue in the locomotive apparatus, all indicate that the stomach and small intestines participate in the irritation, and we may figure to ourselves their internal membrane in the same state as that in which we have seen the mucous membrane of the eyes and that of the nasal fossæ. Finally, the eruption appears, it is an inflammation, and so far every thing is analogous, with a few exceptions in the primary seat of the irritation, to what occurred in the development of variola. But the time has arrived, when these diseases will offer us much more marked differences. The visceral phlegmasiæ have no tendency to abate after the eruption, the bronchitis continues to penetrate deeper into the lungs, without previously diminishing in the bronchiæ, and the patient runs the double danger of suffocation and peripneumony; the gastro-enteritis will not necessarily be so obstinate, for it is the inflammation of the respiratory passages that constitutes the principal phenomenon of measles; the progress of the gastro-intestinal phlegmasia will then be subordinate to the individual predisposition, as well as to the mode of treatment. But let us revert to the skin.

The inflammation with which this membrane is affected can no longer be compared to that in small-pox. There are very few cases, where it is sufficiently intense to influence the progress of the visceral irritations. At the same time such cases have been observed, and vast phlegmonous erysipelas has occasioned the loss of patients. But what generally takes place only serves to justify what we have said above on the reäction from the interior towards the exterior, and *vice versa*. In fact, in measles, the irritation is not repelled towards the secretories of the periphery.

The cutaneous redness appears to be here only a sympathetic phenomenon; it is scarcely inflammatory, and after its appearance, the catarrh, which has penetrated to the very depth of the visceral cavities, instead of abating, only appears more intense, at least in adults. The redness after having lasted four or five days, declines, and disappears in producing a slight desquamation, and its disappearance does not appear to influence the visceral irritations. These now act independently of the cutaneous affection; but still in a manner subordinate to the disposition of the patients and the action of the modifiers employed by the physician. Most generally the gastro-enteritis gives way first, and the fever disappears with it. There yet remains the bronchitis, which abates and disappears after having traversed the whole extent of the respiratory surfaces, which often requires several weeks.

Such is the natural, or more properly the normal course of measles; but how many chances are possible which cause the disease to deviate from this fortunate direction! Sometimes inflammation and the spasm which is the consequence of it, predominate in the bronchiæ and cause the death of the patient from suffocation; at other times the bronchitis, which was believed to be on the point of terminating, penetrates the parenchyma and becomes converted into pneumonia or pleurisy. In other cases, and especially in adults, whose digestive organs were irritated previously to the disease, gastro-enteritis becomes the predominant symptom, or it concurs with the pulmonary inflammation to suddenly destroy the life of the patient. At times also, the irritation is transmitted to the brain, and the patients are subjected to all the consequences of such a metastasis. Finally, there are circumstances which occasion the phlegmasia to remain chronic and apyretic, sometimes in the respiratory passages, where it produces phthisis; at others in the digestive canal, where it keeps up chronic gastritis, enteritis, or colitis. Hence arises the opinion maintained by the ancient physicians, who were acquainted with no other practice than the evacuation of the humours, that measles require at their close, the repeated use of purgatives.

Founded on the data, that we have recapitulated, the physiological doctrine has refuted errors so prejudicial. It has shown that, since measles has so slight a tendency towards depurative

crises, it is improper to oppose it at its commencement by sudorifics, which can only aggravate the visceral irritations; and towards the period of its decline, to combat it by purgatives, which tend rather to restore these irritations to the acute state, than to remove them. Such are the truths which we are led to deduce from Prop. CXLIII, in regard to measles. Let us now see what it will suggest to us on scarlatina.

We have nothing positive respecting the existence or non-existence of a contagious agent, the necessary generater of this disease. It does not attack the majority of mankind. Many persons may approach and nurse those who are affected with it without contracting it. It is most commonly observed in individuals whose skin is delicate and irritable, and who are of a sanguine temperament. It generally appears in the middle of winter and at the approach of spring, and is announced by a fever which appears to be provoked by a gastritis, and which is almost always, but not necessarily accompanied with inflammation of the tonsils and soft palate. The turgescence of the sanguineous apparatus is always considerable: the head, the thorax, and the abdomen, are filled with blood; towards the third day, the skin becomes injected in its turn, and presents, instead of irregular spots like those of measles, a uniform redness resulting from the confluence of an immense number of small inflammatory pustules. Hence Brown has placed scarlatina at the head of the most sthenic diseases.

If we compare the course of the greater number of cases of scarlatina, in which no local influence adds to the intensity of the disease, with the course of the two preceding affections, we shall observe that all the points of inflammation have a tendency to a simultaneous resolution: as the skin fades, the angina abates, the fever diminishes with the general exhaustion, the tongue is lighter coloured and the thirst less importunate. Finally, the disease disappears and leaves no subsequent chronic phlegmasia. The cases which are an exception, detract nothing from the importance of this practical observation.

They have been remarked in subjects who have a very considerable inflammatory predisposition, who had one viscus more irritable than the others, and under those atmospheric influences which generally produce the most violent inflammatory diseases.

Then the inflammation may become predominant in the soft palate, and the tonsils, causing suffocation; it may be propagated to the lungs in the form of peripneumony or predominate in the stomach. We have observed seasons in which the brain was constantly the seat of a considerable engorgement, and to such a degree that some patients perished of apoplexy during the first days of the disease. We have seen two cases where the cutaneous inflammation was not confined to the superficial layer of the skin, the whole thickness of this integument was injected and the subjacent cellular tissue participated in it. These cases were fatal, because the inflammation had not been treated at its commencement, and the great viscera partook of the apoplectic state of the cutaneous and external cellular tissues.

It results from this exposition, that the indications of scarlatina are also those of inflammation, and it is over the viscera that the practitioner should always watch.

Thus, to sum up, gastro-enteritis is the necessary precurser of the eruption of small-pox; ophthalmia, coryza, and bronchitis, those of the rubeolous eruption; gastro-enteritis, alone, or accompanied with angina tonsillaris, that of scarlatina. It is the visceral phlegmasiæ that constitute the whole danger of these diseases. But small-pox is distinguished from the two others by the intensity of the cutaneous inflammation menacing the external parts with frightful disorganizations, such as ophthalmia and abscesses, and tending to renew the visceral phlegmasiæ at a period when the forces, being already much diminished, have a difficulty in accomplishing a gradual resolution, and the repulsion of the irritation towards the excretory organs. There are hence two indications proper to this disease, that of moderating the inflammation in the tissue of the skin, and that of recalling it towards the exterior by revulsives, when it appears to prematurely have a tendency to repercussion. The other indications, of which the principal is to facilitate the eruption by moderating the excess of visceral inflammations at the commencement, are common to all the eruptive phlegmasiæ.

PROP. CXLIV.

Hypochondriasis is the effect of a gastro-enteritis, which acts energetically upon a brain predisposed to irritation.

The peculiarity of irritations of the viscera is, that they exercise much more influence than those of the external tissues on the intellect. An individual will support the most painful operations, and even tortures, with serenity, when exercised on the most sensible parts, whose courage will sink under the perpetual influence of a visceral irritation. These irritations weaken the courage, and render pusillanimous, not only all mankind, but also those whose brain is organized in a certain manner. But what is this manner? Here is the interesting question. It is the more delicate to treat on, as we fear to wound the feelings of hypochondriacs, who are often men of talents.

We have demonstrated, in our *Physiology applied to Pathology*, that the privilege enjoyed by the viscera of the two inferior cavities, of obtaining from the brain, in spite of the opposition of the will, the action of the respiratory and cephalo-splanchnic muscles, is only attributable to the predominance of the great sympathetic nerve in these viscera. We have added, that when these viscera were still more strongly irritated, they forced the brain to place at their disposition, muscles that in the normal state are subject to the will alone; and we have given, as an example, the necessity of vomiting, that of the evacuation of the fæces, that of the expulsion of the fœtus, which oblige individuals to assume certain attitudes. This being premised, we made comparisons, from which it resulted, that all visceral irritations which alter and denaturalize the propensities, are only explainable by a similar influence; that is to say, by violent stimulations of the brain. Now, what happens in hypochondria, the brain, perpetually tormented by stimulations transmitted to it by the viscera, is ultimately deprived of the power of act-

ing in the mode which constitutes reason. The attention becomes exclusively fixed on the viscera whence arise the irritations which it receives, and on the different tissues to which the brain itself has reflected them, and all this becomes the foundation of more or less false reasoning, always based on the ideas which hypochondriacs have formed of diseases and their causes. It is thus that they imagine that they experience lacerations, ruptures, and explosions in the bowels, that they think they feel animals moving there; that they speak of the transfer of blood from one spot to another, of violent fevers, of which there is no symptom, of mucous humours embarrassing the respiratory passages and nasal fossæ; of wind passing from the abdomen towards the thorax, the head, or limbs, that they conceit that they hear noises in the head, that they have singing in the ears, that they insist that they can digest nothing, although they are tolerably well nourished; that they have more or less painful sensations in the muscles, or articulations; that they imagine that they are on the point of being attacked with apoplexy; that they maintain, against all evidence, that they cannot urinate, or evacuate their feces; that they pretend that they experience suffocation, or strangulation, when their respiration appears free; that we hear them speak of horrible pains in a part of the body whose functions are not deranged in a manner correspond ing to the supposed intensity of these pains; that they believe that they are excessively weak, or contend that they are prodigiously emaciated, and that their complexion is greatly altered, although the contrary of all this is evident; that they conclude, from the appearance of some insignificant cutaneous eruptions, that their humours are corrupted, and that they feel them so in their vessels, &c. &c. A great number of these patients are tormented with a sensation of more or less extraordinary tastes, that of blood, which predicts hæmorrhages to them, that of sugar, earth, metal, &c. Their existence is but a succession of torments, and all their sensations are extravagant and painful. They dare not do, or attempt any thing of importance; they implore the aid of all physicians, of every quack; they almost always find themselves benefited by the first remedies prescribed to them,

but they soon become dissatisfied with them, and abandon them to demand others.

From the exposition of so many evils, which are not substantiated, at the first glance, either by fever, derangement of the excretions, want of assimilation, or by an emaciation corresponding to the pretended severity of the sufferings, we are tempted to consider hypochondriacs as fools. However, on a closer examination, it is perceived that they are really diseased. They always have irritated viscera, and if those of digestion did not first suffer, at least these organs are attacked in a consecutive manner. Hypochondriacs have eructations, retching, diarrhœa, or constipation, gaseous distention of the abdomen, salivation, unnatural pulsations of the heart, convulsive movements, derangements of the biliary secretion, and other not less evident lesions, which might lead to a belief in the reality of the painful though exaggerated sensations of which they complain. In fact, it is clear that a stomach which creates gas or rejects food, may be painful, burning, &c. that too agitated a heart may cause painful sensations; that the irritation of these two viscera may impede the respiration, and give rise to a number of sympathies in the brain, the urinary and genital organs, and in the apparatus of locomotion.

We say that the digestive apparatus always plays a very active part in hypochondria; the reason of this is, that all the viscera communicate the irritation to each other, from the connexions established between them by the great sympathetic, and as the nerves predominate the most in the digestive apparatus, it is also this apparatus which ultimately becomes the principal focus of irritation, and from it are given out those irradiations which have most influence on the brain; for we have many times proved that from the nature of its functions, this visceral apparatus must command the will more imperiously than all the others.

We now approach a question of the highest interest, and which in our opinion, has always been erroneously viewed. It is readily granted, that the great sympathetic nerve is affected in hypochondriacs, that it is principally so in the abdomen; but the irritation has been located in the ganglions, in the plexuses, and in the branches of this nerve. Sufficient account is not taken of the

mucous membrane of the digestive canal, in which resides an internal sense of the most exquisite character. The imagination of physicians vaguely figures to them the ganglionic-nervous apparatus as too sensible, as the seat of extraordinary vibrations and disordered movements, the perception of which torments the brain, but it appears that it does not give them any information of the state of the extremities of these nerves in the points where they communicate with those of the eighth pair, in becoming lost in the sanguineous capillary tissue. It is nevertheless there, that the principal phenomena must occur; it is from thence that the irritative impulsions must radiate, for unless the nervous chords, to whichever set they may belong, are pinched, pulled, or inflamed, they only act as conductors of stimulations, and these stimulations arise in the parenchymatous tissues, in the points of extreme division, where a nervous matter analogous to that of the brain is found, in immediate relation with the molecules of the fluids.

Every one knows that the nerves accompany the vessels for a long distance without becoming confounded with them, limiting themselves to furnishing them with small twigs for their individual life; but a point takes place, where they must be confounded with these vessels, and it is there that the impulsions which give motion to the animal machine, definitely commence and terminate.

These relations doubtless exist in all parts of the body, but there are a great number of these parts where the mobility, essential to the development of irritation, does not exist in the normal state. It can be established but gradually, and by the medium of inflammatory irritation, which softens these tissues, and developes their vital properties. Good God! where would we be, if all the tissues which enter into our composition were irritable and excitable, if all simultaneously transmitted stimulations to the brain! There are then a great number of tissues which are not habitually irritated, which become so only from the action of violent or extraordinary causes, or from causes whose action is prolonged for a very long time. It is then tissues which are naturally and normally very excitable and irritable, that receive impulsions from external modifiers, and which

transmit them to others, through the medium of the nervous cords which establish communications between them.

In reflecting on these considerations for a short time, it will be perceived that the surfaces of relation in the respiratory and digestive organs, must be the tissues, essentially the movers of the irritation; it will be conceived how the nervous matter met with there, acquires under the influence of stimulants a vicious irritability, how the irritations it experiences are repeated in the brain; how finally, this last organ, in acting on the same membranes, incessantly adds to their excitability; finally, he will understand that the cords of the eighth pair of nerves, and those of the great sympathetic, being the mediums of communication between the two nervous substances, that of the brain, and that of the gastro-intestinal internal sense, must transmit the irritation to a multitude of other more or less excitable tissues, either immediately, or by means of the nerves with which they communicate. It is thus, that we view the visceral neuroses; we see two primitive foci of irritation, of greater or less extent; one in the sensitive surfaces of the viscera, the other in the brain; and we consider the intermediate nerves as the conductors of the stimulations which radiate from these two foci. Those which proceed from the viscera are transmitted directly to the brain, but those which flow from the brain are disseminated by the nerves of relation, not only in the viscera, but also in the external parts, and as it were, go astray in the sensitive and locomotive apparatuses. We cannot yet understand how the great sympathetic could transmit the stimulations it received in the viscera, to such a distance, without the intervention of the brain—we require positive facts and observations to believe in this distant transmission.

In our opinion then, hypochondria is neither a purely cerebral affection, a simple vesania, nor a pure and simple lesion of the nervous system, either in the great sympathetic, or in the eighth pair; it is owing to an irritation of the nervous and other tissues of the viscera of the two inferior cavities, and this irritation has its principal seat in the mucous membrane, whence it is diffused in the nerves. It may commence in all the viscera of these cavities, without excepting even the heart, although this is not provided with an internal sense; but it is not well marked until

the gastro-intestinal internal sense is in a state of chronic irritation. Finally, we think that this irritation is one grade of the inflammatory state. In fact, it is often the consequence of imperfectly terminated acute phlegmasiæ, or rather it is a chronic gastro-enteritis which has been exasperated by irritants.

The experience of ontologists has but too well taught us, that repeated emetics often produce hypochondria, and that in forcing the stomach to digest by means of tonics, bitters or purgatives, extraordinary sensibility and excitability are communicated to the gastro-intestinal apparatus, which torment the centre of perception and end in the same result.

We have now to recur to the question of predisposition. Every person is not susceptible of hypochondria. Extreme sensibility exposes them to it no doubt, but it alone does not constitute the predisposition. This last appears to us to depend on a certain pusillanimity arising from the organization of the brain, and which is almost always hereditary. This pusillanimity may, however, coëxist with courage in other respects; for man presents more contrasts than any other living being. There are men who do not fear death in a vast number of perilous occasions, who are endowed with both civil and military courage, who even, as we have said, may brave the pain of external parts; but who cannot avoid anxieties, fears and cares, when they feel themselves continually harassed with sensations arising from the viscera. These sensations attract their attention in despite of themselves, fill their imagination, and finally triumph over their resistance and every mode of distraction to which they may recur. They cannot avoid believing that these sensations are sinister, they remind them of all the diseases of which they heard spoken, and inquietude takes possession of their mind. This passion becomes developed to excess, and continues as long as it may appear justified by the painful sensations.

But, if there are persons disposed to this kind of anxiety, on the other hand there are many others who are wholly indifferent as regards their health. Such persons see the bright side of every thing, hope never abandons them, and the illusion continues to the last moment. These last never become hypochondriacs. There are others who have scarcely any sensibility in the viscera,

they are equally exempt from hypochondria. But others are also met with, who, although very sensitive, are endowed with a firmness of character, the result of a fortunate cerebral organization which constantly preserves them from this affection.

It results from all this that hypochondria is essentially dependent on the organization of the brain. It now remains to determine what form of the cranium predominates in hypochondriacs. We, in fact, possess some data on this point, but they do not appear to us sufficient to establish general principles. What we can affirm is, that persons who have the forehead narrow and depressed at the sides present many examples of this melancholy affection; but as we have met with individuals of a careless disposition, having this conformation, and hypochondriacs among those with well-developed foreheads, we think it better to suspend our judgment, until we may possess additional facts.

As to the treatment of hypochondria, it consists in two orders of means: those which tend to calm the irritations of the viscera, and those which cause a distraction of ideas. We have several times cured this disease at its commencement, by general bleedings in plethoric persons, and by the application of leeches to the epigastrium and hypochondria, when it was caused by a well-marked phlegmasia of the stomach or duodenum; a severe regimen was sufficient to confirm the cure. But when the disease is already very inveterate, these means do not suffice, recourse must be had to mental diversions, travelling, and oftentimes the most active bodily labour. However, as the means which would succeed best to dissipate the chronic gastritis, will be detailed hereafter, it would be superfluous to dwell on them at present.

When the inquietude of hypochondriacs arises from an irritation of the heart, which is by no means rare, the physician ought to direct his attention to this important organ; and at the same time he ought never to forget that irritations of the heart are usually complicated with those of the stomach; this renders it incumbent on him not to insist in a heedless manner on the use of digitalis, hydrocyanic acid, and other sedative antispasmodics, which only operate as such when the internal membrane of the stomach is exempt from all inflammatory irritability. The discussions we have gone into in this commentary, autho-

rize us to give Prop. CXLIV, the following form. *Hypochondriasis is the effect of a permanent irritation of the principal viscera of the abdomen and pelvis, but it becomes complete only by the development of a chronic gastro-enteritis, which acts with energy on a very irritable and peculiarly organized brain.*

PROP. CXLV.

Most cases of dyspepsia, gastrodynia, gastralgia, pyrosis, cardialgia, and all cases of bulimia, are the effect of a chronic gastro-enteritis.

Our predecessors adopted as many diseases as there were forms of indisposition. Physiological medicine has fortunately abrogated this division, which was too arbitrary; it bases diseases on organs and therapeutic indications. This doctrine pays no attention to the different forms of the suffering of organs, as long as these forms do not furnish different indications. Now, chronic gastro-enteritis may, without losing its identity, and without there being a necessity for important modifications in the treatment, give rise to the groups spoken of in the proposition. It was therefore superfluous to make so many different diseases of it. What it is of importance to verify, are the cases where these groups are independent of inflammation; for it is only then that they constitute a particular disease; but to do this we must also recur to physiology.

Independently of inflammation, the stomach becomes painful from several more or less irritating causes. The sudden impression of cold drink; indigestible food taken in large quantities; a violent moral affection; the sympathetic influence of an irritated organ which has a close relation with this viscus, as the uterus or the kidneys; certain mechanical perturbations, as sailing, jolting in a rough carriage, and swinging, may act on the stomach so as to occasion violent pains in it. Pinching, ligature, or inflammation of the large nervous trunks, sometimes also exercise such an influence on this viscus, as to occasion gastralgia, and almost

insupportable cramps. It is also possible, that a pain seated in some nerve of relation, may be suddenly transferred to those of the stomach. In all these cases there is no inflammation at first, and the pain may be removed by the diffusible stimulants, commonly known under the name of antispasmodics, sedatives, and narcotics. This may be done whenever the signs of inflammation of the mucous membrane do not exist; nevertheless such is the organization of our tissues; and especially of that in question, that if the irritation, at first entirely nervous, is prolonged for some time, it causes an afflux of blood, heat is developed, and inflammation supervenes, in virtue of the law *ubi stimulus, ibi affluxus.* This change will be more rapid, in proportion to the irritating properties of the means that were employed to relieve the pain. Hence the necessity of not obstinately persisting in the use of stimulants and tonics in affections of the stomach apparently of the most nervous character.

Such are the precepts of which practitioners should never lose sight; they are also applicable to cases where patients are tormented with acidity, which causes that sensation of burning propagated to the throat, called pyrosis. This acidity is generally an attendant symptom on well-marked cases of gastritis, and only yields to means of cure appropriate to this affection; but there are circumstances where inflammation does not appear to exist, and where patients are evidently alleviated by absorbents. But let us be on our guard; these absorbents are alkaline substances always of a more or less irritating nature, and their continued use ultimately produces a true phlegmasia of the gastric passages. Experience has fully convinced us of this fact.

It is seen how delicate the grades are which separate nervous pains of the stomach from inflammation. As to bulimia, as it always supposes an augmentation of heat in the stomach, it necessarily depends on inflammation, whenever it is not the effect of convalescence, or the rapid growth of the body at the epoch of puberty. Even in these two cases it often arises from inflammation. Furthermore, it is by the symptoms appertaining to the inflammatory state, rather than by the kind of pain, and the alteration of the appetite, whether this be diminished or increased, that the question is to be decided.

Sometimes the inappetency arises from an obstacle to the passage of matters, a strangulation, or an obliteration of the biliary ducts, as the bulimia may be occasioned by the existence of a diarrhœa, or any other discharge which abstracts nutritive materials. The existence, or non-existence of these causes, should therefore be ascertained before a diagnosis is formed. Finally, the inappetency which supervenes in persons who have been affected for a long time with gastric pains and vomiting, may arise from softening and destruction of the internal membrane of the stomach, especially of the great curvature, a kind of lesion which is almost inseparable from long sufferings of this viscus, and which sometimes attains such a degree as to produce an impossibility of swallowing the smallest quantity of liquid.

PROP. CXLVI.

Intermittent umbilical colic, with constipation, but unattended with tenesmus, characterize certain grades of inflammation of the mucous membrane of the small intestines, especially in the chronic state, if symptoms of peritonitis are not present; but this enteritis is more frequently indolent than painful.

The facts stated in this proposition are true, but they are not sufficient to give a complete idea of chronic apyretic enteritis of the small intestines. It is therefore necessary to enter into some elucidations of this subject.

Enteritis may predominate in the duodenum, jejunum, and ileum. Duodenitis will be treated on in Prop. CL, to which it properly appertains. We shall here only occupy ourselves with jejuno-ileitis; as the line of demarcation which separates the jejenum from the ileum is arbitrary, we shall not attempt to assign particular symptoms to each of these enterites. We judge that irritation is seated in the small intestines in question, by the following signs: the stomach performs its functions properly, the duodeno-hepatic region is not painful, patients do not begin to feel incommoded for three or four hours after the ingestion of

solids, and oftentimes experience none after taking fluids; these ailments consist in slight pains, which sometimes change place, and at others always manifest themselves in the same spot. These pains are colics, but of a very different kind from those of the large intestine, they do not terminate at the anus, they are not followed by alvine evacuations nor tenesmus, they are accompanied with more or less violent borborygmi. At the commencement of the disease this is the only symptom that occurs. Persons say that their intestines make a noise and rumble, this supervenes suddenly and astonishes them the more as they had not as yet experienced any colic. But finally this latter appears, at first it is referred to the *linea alba;* but this character, common to all kinds of colics, cannot serve to distinguish that of the small intestines. They are much better characterized as we have said, by the absence of alvine evacuations and tenesmus; afterwards, when a region of the small intestines have been affected with irritation for some time, patients complain of a fixed pain there, and if pressure be exercised, we find that there is a certain resistance in this place and that its sensibility is generally a little augmented by the pressure.

However, these tumours are not at first permanent. They even disappear in a few minutes on pressure being made, which seems to displace the gas which forms them. But they ultimately become persistent. Patients have one side of the abdomen habitually more tense than the other, and on applying the hand to this region, more heat is felt than on the opposite side, and pressure always occasions pain in it. In some enterites the whole extent of the abdomen is painful and renitent.

It is then that the enteritis is definitively fixed, and if nothing arrests it, we may be assured that the renitence and the pain will go on continually increasing, until the inflammation has invaded the whole extent of the canal, or become converted into peritonitis. These changes sometimes occur in an acute and sometimes in a chronic form, according to the kind of modification and predisposition of the patients. If the chronic form persists, these latter often become hypochondriacs, and sometimes ultimately dropsical. Oftentimes also the duodenum, the liver, and the stomach at last

become affected, or else the inflammation passing the ileo-cœcal valve, produces a diarrhœa which causes death by marasmus.

The passage to the acute state always gives rise to extremely severe and frequently fatal diseases, on account of the organic alterations produced by the chronic enteritis.

Such is a faithful picture of this phlegmasia, which too often succeeds the repeated use of purgatives, that of sulphurous mineral waters, and the specific medications employed against tenia. We shall not enter on the treatment, which will be spoken of in commenting on the propositions that have been appropriated to it.

As to organic alterations, they have no peculiarities which do not depend on the affected tissues, and are embraced in what we have elsewhere said of degenerations produced by irritation.

To embrace all the grades of chronic enteritis we have noticed, Prop. CXLVI, must be modified in the following manner:

Borborygmi without pain; then colics, at first umbilical, then seated in one region of the abdomen, without tenesmus, or consecutive alvine evacuations, with a renitent tumefaction, painful on pressure, characterize apyretic enteritis of the jejunum and ileum, as long as the symptoms of chronic peritonitis do not exist.

PROP. CXLVII.

The lymphatic ganglions of the mesentery do not become inflamed except as a consequence of enteritis, and this double phlegmasia, when prolonged, constitutes tabes mesenterica.

It was in the first edition of the *Examination of Medical Doctrines* which appeared in 1816, that the author for the first time published that swelling of the mesenteric glands during enteritis, was caused by the same mechanism as buboes in the groin in those who have chancres on the penis, &c. It was formerly thought that inflammation and engorgement of these glands constituted a particular disease, independent of the fever, or that

this fever was in fact the disease. The enteritis of children was unknown. The fever was attributed to engorgement of the mesentery. The word inflammation was not even pronounced, and there was no other theory as regarded the apyretic chronic state, than that of a lymph too thick, or coagulated by the scrofulous vice, which was arrested in the conglobate glands of the mesentery, as it is sometimes arrested in those of the neck or any other external part.

This theory has met with the fate it deserved, it is now known that inflammations of the mucous membrane of the small intestines is transmitted to the corresponding ganglions; but it may still be doubted, whether some cases of primitive inflammation or subinflammation of these ganglions do not exist. As regards inflammation we would venture to reply in the negative; as to the subinflammations we are not so confident; at the same time we may state that we have not met with an example of the development of the ganglions of the mesentery, anterior to irritation of the mucous membrane. Patients cut off by chronic pneumonia often present the mesenteric ganglions in a tuberculous state; but we always find ulcerations in the small intestines of these subjects, and it is generally remarked that the glandular engorgements correspond to these lesions. Furthermore, when this relation is not well marked, no conclusion can be drawn from it, for inflammation does not always remain seated in the same point of the mucous membrane; it pervades every part of it; it is more easily dissipated than that of the ganglions; and as these latter, although they are no longer inflamed may remain engorged, suppurating, indurated or tubercular, in short, it may often happen that they may be met with in this state opposite a portion of the mucous membrane, which presents no trace of phlegmasia. Oftentimes also, the inflammation ceases around an intestinal ulceration, when the blood has been attracted to another place, by a point of irritation which has not developed itself till within a few days before death. This frequently happens in persons affected with phthisis pulmonalis, in whom diarrhœa does not appear till this epoch, as well as in those who are carried off by a sudden attack of gastritis, by an increase of the pulmonary inflammation, by a pleurisy, a violent peripneumony, an apoplexy, or who perish

from an unexpected attack of hæmoptysis. In almost all these cases the small intestines are found pale; but the traces of the former phlegmasia still exist, and they may be recognised in the mucous membrane as well as in the ganglions of the mesentery.

The most remarkable difference that is observed in relation to the affection of ganglions, between different persons affected with enterites, depends on the constitution of the lymphatic system. Those in whom it is very irritable always present ganglionitis, if the enteritis has been the least chronic; it is thus among children who die from this latter disease, that scarcely one is found who is exempt from ganglionitis, whilst adults only appear affected with it, when they are endowed with an infantile temperament, that is, when they have retained a marked predisposition to irritations of the lymphatic system, which almost always is manifested by other diseases of the same system.

We ought, however, to state, that the atmospheric constitution contributes to the development of ganglionitis of the mesentery; we have known years, in which these affections existed in almost all subjects carried off by gastro-enteritis, whether acute or chronic, and we have noted that the season was rainy and damp, whilst in dry and hot summers, bodies seldom presented traces of the mesenteric affection.

PROP. CXLVIII.

The mesenteric ganglions do not inflame from simple peritonitis.

It is this fact, observed in a vast number of cases, which suggested the proposition to the author. Sometimes, however, in engorgements of the cellular tissue of the mesentery and omentum, subsequent to chronic peritonitis, we find, in the midst of lardaceous muscles, and fibrous, scirrhous, encephaloid or melanosed tissues, (these melanoses arise from extravasated blood,) we find, we say, tubercular ganglions. The mucous membrane of the small intestines should then be closely examined, ulcerations or some other trace of enteritis will generally be found

there, and the text teaches us that the irritation commenced in the internal surface of the digestive canal.

PROP. CXLIX.

Hepatitis is consecutive to gastro-enteritis, except when it is produced by external violence.

PROP. CL.

Chronic gastro-enteritis is the cause of hepatic engorgements, and of yellow and fatty livers, even in persons affected with phthisis.

These two propositions cannot be separated, for chronic irritation of the digestive canal acts on the liver in the same manner as acute gastro-enteritis, and it is this mode of action which we now intend to elucidate.

The liver, from its size, and from the enormous quantity of blood it contains, has always attracted the attention of physicians. The ancients considered it as the laboratory of the blood. They regarded it as the centre and origin of the veins. They had remarked, that it is the first recipient of the blood in the fœtus; was more required to give it great importance? It was afterwards ascertained that it was the secretory organ of the bile, and as this humour was thought to play too great a part in the economy, the liver therefore became more interesting in the eyes of physicians; it was the source of one of the four cardinal humours, and this humour appeared to impress a particular character on the temperament; it also appeared to be the source of a vast number of diseases. How many reasons to excite the solicitude of practitioners as to the diseased or healthy state of the liver? Hence, during every epoch that preceded the physiological era, have not the greater proportion of diseases of the digestive canal been referred to this organ. It is true that the vena portarum shared in its celebrity to a certain point, when the warning cry of the Stahlians was to be heard, every where repeated, *vena portarum porta malorum;*

but the important function of the liver in fabricating one of the principal menstrua of digestion, always recalled the attention of physicians to it. Every febrile state, with pain or renitence in the right hypochondrium were considered as hepatitis, even without a manifest tumefaction of the liver having been indicated by pressure, and this disease was described as one of the most frequent of our affections. Many physicians placed the seat of yellow fever in the liver; as soon as a person experienced a derangement of appetite, and his mouth became bitter, his tongue and conjunctivæ yellow, and he vomited bile, or had bilious stools, they attributed it to the liver, without even thinking of the digestive canal. The bilious affections of the ancients now became hepatic affections.

However, when post mortem examinations were multiplied in Europe, it was ascertained that the liver was less frequently inflamed than had been supposed; the name of gastric was then bestowed on these diseases, but they were far from being considered as inflammations; they were embarrassments, or bilious or saburral turgescences. The liver participated in them, but was no longer their sole seat.

At the same time, in cases where individuals, otherwise in good health, experienced a fixed and deep-seated pain at the lower part of the right hypochondrium, it was always attributed to an obstruction of the liver, as it was considered an obstruction of the spleen, when the same kind of pain was experienced under the false ribs of the left side.

The author of the propositions on which we are commenting, dared to attack this universally received theory. After having demonstrated that gastric embarrassments are grades of gastritis, he showed that true hepatitis is a very rare disease, and that a majority of those described by authors under that name, were gastro-duodenites, or simple chronic or acute inflammations of the duodenum. Professor Pinel had already observed, that there was no doubt that there was irritation in the duodenum, in what were termed bilious fevers; but that author had not referred this irritation to the phlegmasiæ, and faithful to the practice of the ancients, he continued to treat it by emetics. He also overlooked the coïncidence of the inflammation of the other small intestines

in his gastric fevers, as well as the true cause of the prostration which supervenes during the progress of these diseases; and these fevers, notwithstanding the duodenal irritation, did not cease to be considered as idiopathic. The duodenal irritation of this professor was only an episode, a sort of complication, which did not in the least change the character of the essential entity, or which only modified it in furnishing an indication for emetics. Certainly, this was not the true theory of gastro-duodeno-hepatic irritations; therefore, that of the nosographer made no change in the ancient practice. Every where, they agreed with him in the use of emetics in acute diseases, whenever the tongue became saburral, and there was nausea or bilious vomiting, with increase of sensibility at the epigastrium, or in the right hypochondrium, and this practice almost always induced the adynamic state, as may easily be proved by reading the clinical work of this professor. Some patients escaped by the revulsive effects of the emetics, and these cures, whose cause was not explained, served to encourage practitioners, and to propagate error.

Such was the state of medical theory, when the author of the propositions proclaimed, that generally, except in traumatic cases, the liver is irritated only consecutively to the stomach, small intestines, and especially to the duodenum; that the bilious supersecretion is produced in phlegmasiæ of the mucous membranes of the digestive canal, as it is in the act of digestion, that is, by the stimulation of the internal surface of the gastric passages; that when the inflammation predominates towards the pylorus and in the duodenum, the liver is more influenced than when it occupies any other region of the digestive canal; that pains seated in the pylorus and duodenum, are frequently mistaken for pains in the liver, and hepatitis is often supposed to exist, when in reality it is gastro-duodenitis; that this error is committed in the chronic as well as in the acute state, and that incipient obstructions of the liver are most generally only duodenitis; finally, he established that from receiving sympathetically the irritation of the adjoining mucous membranes, that the liver may become idiopathically affected; this, in the acute state, may give rise to true hepatitis, and in the chronic, to different kinds of alteration, the most common of which is what is called a fatty state of the liver.

It has been remarked, that patients who perish from pulmonary consumption, often present this kind of alteration; it was not at first known to what this was to be attributed, but modern chemists have aided physicians and proposed an entirely new theory to explain it. According to them, the hydrogen which forms the fat, entering the blood on the resorption of this humour, during the progress of the marasmus, is deposited in the substance of the liver. They base this on an opinion of the ancients, who thought that the principal materials of the biliary secretion are furnished by the fat of the mesentery. It was not, therefore, astonishing, that this animal oil, being melted in every part, from the heat of the fever, was taken up by the vena portarum, and was found in the liver in such abundance, that it could not be entirely consumed in the fabrication of bile. This hypothesis, as may readily be conceived, was not less applicable to other consumptive states, than to those of the lungs.

The foregoing is the most satisfactory information we possessed on the fat state of the liver, previous to the promulgation of the physiological doctrine. As to persons with fat livers, in whom the cellular tissue was filled with fat, they explained it, by asserting that the superabundance of this liquid was so great in them, that their liver might become fat without there being any necessity for them to grow emaciated.

A difficulty, however, presented itself; this was, that the analysis of these pretended fat livers generally afforded no true fat, but on the contrary, an albuminous substance, tinged of a yellow hue by the colouring matter of the bile, or a sort of adipocire. As regards ourselves, we have several times analysed portions of fat livers, and have never detected a fat similar to that of the cellular tissue. This circumstance, joined to the coïncidence of inflammations of the duodenum, and often of the upper part of the jejunum, must ultimately settle the theory of these fat livers. It is not possible to attribute this state to any other cause than irritation. Besides, when true fat is met with there, it proves nothing against the recent assertion; in fact, if it is true that fat is one of the materials of bile, it must be attracted to the liver in a proportion equivalent to the abundance of the secretion of this organ, caused by the gastro-duodenal irritation, if it is not true

that it is one of the constituents of bile, it may still be attracted to the super-irritated liver, at a time when the humours are filled with it, either from its superabundance in the cellular tissues, or from the resorption that takes place during the progress of the marasmus, and it must be in one of these two modes, that fat livers are formed in poultry, which are gorged with food, for the purpose of forming delicacies for the table. They perish from a gastro-enteritis, similar to that of gourmands of our own species, and their livers, the action of which has been prodigiously augmented, are in a state of hypertrophy, caused by the superabundance of the materials which serve for the formation of the bile.

As to the cases, and they are not the most rare, in which the liver is gorged with lymph, there is nothing astonishing in their occurrence, as the organ contains many lymphatic vessels. For the same reason, we need not be surprised to meet with tubercles, medullary sarcoma, cysts, and other productions in the liver, similar to those observed in all the other viscera. Is it not like them provided with a cellular tissue serving to unite and sustain its vascular system, and is not this system itself extremely diversified and complicated?

In reflecting on the functions of the liver and in comparing them in the fœtus and in the adult, we have been led to consider them as forming two different orders. Of the two functions of this viscus, the first in date as well as in importance has relation to the circulation. The liver fulfils this by serving as a reservoir to the blood and in transmitting it to the heart in the fœtus. When after birth, the route of the umbilical vein is obliterated, the liver still receives the blood of the vena portarum, and a part of this fluid is diffused in its parenchyma, and communicates with that flowing through the hepatic artery, to return mingled with it, into the vena cava, not far from the heart. It is thus that this latter viscus has constantly in its vicinity a reservoir of blood which swells the torrent brought by the vena cava from the inferior extremities; and if, from some circumstance, this last is intercepted, the heart will always find in this reservoir, whose source is in the digestive canal and the spleen, a sufficient supply to keep up the regularity of its pulsations. On the other hand, there are cases where the blood is in great abundance in

the mesenteric vessels, for example, during violent exercise; this blood returns towards the heart with a corresponding rapidity; but what would happen, if it did not meet with tissues in the spleen and liver capable of serving it as reservoirs? It would dilate the vena porta and vena cava excessively, and perhaps even rupture them. But if, to prevent these ruptures, nature had augmented the dilatability of these veins, they would become varicose, and the blood would develope enormous sacs in them, in which it would certainly coagulate, be a perpetual source of an infinity of evils, and would often occasion an obstruction to the passage of this fluid, and consequently produce death. This evil would be inevitable, for experience demonstrates that whenever the blood accumulates in large masses in any space in the human body, it there forms clots which constantly increase in size until the cavity is entirely filled. Aneurism of the arteries furnish an incontestible proof of this; the heart itself is not exempt from this kind of obliteration, as is demonstrated by the great dilatations of this organ.

Now, in giving to the blood a capillary system like that of the liver, to serve it as a reservoir, nature has obviated all these accidents. The first function of the liver is therefore in relation to the circulation of the blood.

The second has been known for a long time; it is that of secreting a fluid indispensable to the completion of digestion.

By taking this double duty into consideration, we can readily account for the pathological states of the liver. The obstacles which the blood meets with in traversing the heart and lungs must necessarily produce a sanguine turgescence in the hepatic reservoir; but they have not an equal tendency to create irritation there. The irritation of the digestive canal always gives an additional degree of activity to the secretion of the bile, and sometimes causes such a degree of vital erection in the liver as to make it assume the character of phlegmasia. But when this transformation does not take place, the liver at least becomes engorged not only with blood as in the before mentioned obstacles, but also with lymph; for the whole of its capillary system is super-irritated; and this lymph, which is nothing but albumen more or less mixed with gelatinous matter and a sort of adipocire, becoming coloured with the already existing bile, gives that

colour and appearance to the liver, which has been called the fatty state. But, in all cases, it cannot be denied that we must refer these kinds of alteration of the texture of the liver to the phenomenon of irritation, and that this irritation is developed under the influence of that of the digestive canal.

The applications of this theory to practice are very easy. Destroy the obstacles to the passage of the blood through the organs contained in the thoracic cavity and you will prevent the purely sanguineous engorgement of the liver; prevent the irritation of the stomach and duodenum from harassing the liver for a long time, by increasing its action, and you will prevent the formation of hepatitis, the degeneration of the liver, and the alteration of its excretory ducts; for experience has demonstrated to all practitioners that the liver is never so much developed as to project beyond the false ribs, except in individuals who have long suffered from different grades of gastritis or enteritis, or from obstacles to the passage of the blood in the pectoral cavity. Such is the theory adopted by physiological medicine, on the connexion of affections of the liver with those of the digestive canal, and the organs of circulation and respiration. This theory joined to that developed above, on the irritation of the mesenteric ganglions, completely overthrows all that authors have written from the birth of the art, on engorgements and obstructions of the abdomen. This doctrine was developed as far as regards the relations of the duodenum with the liver, in the inaugural dissertation of Casimer Broussais, defended before the faculty of medicine of Paris, in 1825.*

We might on this occasion, have entered into the physiological consideration of the affections of the spleen, but this would have made us digress from the proposition on which we are commenting. We shall content ourselves by saying that the spleen has very close relations with the great curvature of the stomach, that it frequently partakes in the irritations of this portion of the gastric organ; that deep-seated pains in the left hypochondrium, with derangement of the digestive function, precede and prepare affections of the spleen, and are often to it, what irritations of the

* On Chronic Duodenitis, Paris, 1825.

duodenum are to the liver. However, in making these assertions we do not pretend to have said every thing relating to the pathogeny of affections of the spleen. We shall have occasion to return to it in treating of intermittent irritations, and to recur to what we have just established on the part which this singular viscus plays in cases of acceleration of the circulation.

PROP. CLI.

Dropsy in persons who have indulged to excess in alcoholic drinks, purgatives, &c. is the effect of a chronic gastro-enteritis, which has invaded the whole thickness of the digestive canal, of the liver, &c. and penetrated slowly to the peritoneum.

Since the time the mechanical schools were swallowed up by Brunonism, the dropsies of drunkards have been considered as the effects of indirect debility, whilst before this epoch they were attributed to obstructions of the abdomen caused by the thickening and coagulation of the lymphatic juices. As to purgatives, ancient physicians never accused them of producing dropsy, since they administered them with the intention of removing the engorgements, which they regarded as the most common cause of these diseases. But when Brunonism was at its height, many physicians adopting the theory of Cullen, believed that purgatives might, as debilitants, become the determining cause of dropsies. Thus the same physicians who attributed the dropsies of drunkards to indirect debility, recurred to direct debility to explain that which follows the improper use of purgatives and solvents.

At the same time the modern schools were not so exclusively Brunonian, for all the world to agree that debility was a competent cause of dropsies in persons who had abused good living and spirituous liquors. There were also many practitioners, who, without speaking like the adherents of the chemical doctrine, of coagulation produced by alcohol or acids, attributed the dropsies preceded by pains in the abdomen and deranged digestion, to œdema or obstructions, which they did not attempt to explain.

But, finally, the majority agreed with the modern pathological anatomists in substituting organic derangements for obstructions.

However, this change of language produced no alteration of practice. There were, in general, but two modes, which consisted, the first and the most ancient in stimulating by purgatives and pretended solvents, that is to say, by evacuations; and the other in stimulating by permanent or diffusible tonics, I mean without producing evacuations. Nothing was more curious to the physiologist than to see physicians administering bitters, aromatics, and antispasmodics, with the intention of strengthening patients, whose abdomen had become painful and swelled, from the use of succulent food, and the most stimulating drink. Such was, nevertheless, the predominant practice; it was not balanced by that of physicians, who made the most lavish use of calomel after the most copious bleedings. As to the expectants, who limited themselves to whey and the expressed juices of plants, until the time for going to the watering-places, relieved them of their embarrassment, they can only be considered as a subdivision of these last; they manifestly belong to the system of obstructions, the explanations of which they reject, though they adopt all the modes of treatment with more caution, calculating on a coction and slow and repeated crises. I must also mention the contra-stimulists, a sort of hybrid physicians, who unite the practice of the purgative and solvent school to the theory of Brown, which they have restored. In fact, they employ the same means as the humoralists, and even with a greater boldness, in cases of pain with tumefaction of the abdomen, insisting that bitters, drastic purgatives, and neutral salts, act by calming, in a direct manner, the diathesis of the stimulus, which the excitants had established in the viscera of the abdomen.

We have mentioned all these therapeutic methods because they may be arranged with spirituous liquors, as causes of the particular kind of dropsy, mentioned in Prop. CLI. In fact, it all has reference to intestines which are stimulated, whilst they were already too much so, from the nature of their primary affection; of livers, spleens, mesenteric ganglions, and abdominal cellular tissues, which have secondarily participated in the chronic irritation of the mucous membrane; finally, of the disorder, which

this pathological state has produced in the functions of the serous surface, and in those of the absorbents, which correspond to it.

All persons affected with chronic gastro-enteritis, do not become dropsical. Emaciated, nervous, irritable individuals, those who suffer most, fall into marasmus, sometimes with hectic fever, and sometimes with diarrhœa. Without being exempt from the marasmoid termination, robust, fat, and indolent persons are more apt to become dropsical, perhaps because they support chronic phlegmasia a longer time without its developing nervous or febrile reäction; hence, in them, the viscera are the most deeply altered, the forces exhausted, and the dropsy imminent, before the symptoms have acquired sufficient intensity to alarm the patients. We have observed this in a great number of robust drunkards, endowed with a considerable *embonpoint*, and above all, renowned among their acquaintances for the ease with which they can bear considerable quantities of fermented liquors, without being intoxicated. After a long impunity in these repeated excesses, entero-hepatitis takes place in them, the first attacks of which yield without difficulty to antiphlogistic means, sometimes even to the use of purgatives; but a continuance of their mode of life never fails to renew these affections, which recur the more readily if they had been cured by stimulating evacuants. In a short time, the disease was no longer under controul, ascites appeared, the dropsy increased, and a post mortem examination showed, that besides the inflammations of the gastro-intestinal mucous membrane, already advanced into the brown and black state, there was thickening of the whole canal, a state of opacity and even tubercular alteration of the peritoneum, without speaking of the tumefaction and degeneration of the liver, the ganglions, and the omento-mesenteric cellular tissue. This last alteration is always in relation with that of the peritoneum, as that of ganglions corresponds to the ulcerative phlegmasia of the mucous membrane of the intestines. It is then to sub-inflammation of the sero-cellular tissues and absorbents of the abdomen, and not to the pure and simple exhaustion of tone or irritability with which they are endowed, that the ascites are to be attributed, which succeed to prolonged stimulations of the digestive canal; but the physician should never forget that

the provocative irritation of all these disorders is seated in the internal surface of the digestive canal, and consequently is allied to all other grades of inflammation of this membrane. Such are the facts recalled to mind by the proposition which forms the text of our commentary.

PROP. CLII.

Bulimia is the effect of a gastro-enteritis, with predominance of gastro-duodenal irritation. This phlegmasia may exist in a degree which permits the assimilation of a quantity of aliment, far greater than is necessary for the wants of the system, whence result plethora, polysarca, and afterwards the explosion of irritation upon the brain, the articulations, the kidneys, the heart, the margin of the anus, in short, upon all points where an accidental stimulation may invite it.

PROP. CLIII.

Bulimial gastritis often depends upon the abuse of stimulating *ingesta*, and especially of medicines called stomachic, administered whilst the gastritis exists only in a slight degree.

Next to the encephalic apparatus, the stomach is the organ to which an increased vital action is most readily communicated, and by a very disastrous fatality for the human species, it is that which the physicians of all ages have considered the most subject to fall below the normal type of vitality. This error is a necessary consequence of an ignorance of the characters of gastritis. The stomach is eminently nervoso-sanguineous; to this it doubtless owes its excessive irritability. There is nothing in the world more easy than to increase the digestive action in a person in health, and make it assimilate more than the wants of nutrition require. Happily for the species, the stomach exercises a very powerful influence on all the eliminatory passages; but

notwithstanding this precaution, nature is often baffled by the abuse of certain stimulating ingesta. There are some of these, as the bitters and aromatic articles, which raise the assimilating power to such a degree, that if the persons do not take great and continued exercise, they cannot preserve themselves from morbid super-excitation, and even notwithstanding this aid, they suffer fatal consequences from it. We must here recal, in summing up, what has been said on the same subject in the *Treatise on Physiology applied to Pathology*. So long as super-excited individuals are at the period of growth, or they expend the excitement by exercise proportioned to the ingestion, this super-assimilation may be unattended with inconvenience; but as soon as age, a more sedentary way of life, moral affections, and the susceptibility always induced in the skin, when it is not exposed to the air, deprive them of their previous means of preserving their equilibrium, the balance between the acquisition and expenditure of the system no longer exists, and the morbid imminence is established. It is at first manifested by sanguineous plethora and acute phlegmasiæ; but subsequently, when the patients have lost their aptitude for violent reäctions, the whole series of disorders, referred to in the proposition, manifest themselves. It is thus, that the relations, which Stahl observed between gout, gravel, stone in the bladder, hæmorrhoids, hypochondriasis, apoplexy, asthma, &c. are explained; diseases which were successively attributed, in different medical epochs, to disorders of the elements, to the depravation of the humours, to tartar, to fermentation, to the inactivity of the archæus, to a serous humour, to plethora, and to relaxation of the vena porta, without regard to the irritation of the capillaries of the mucous membrane, to the spasm and atony of the nervous system, to imperfection in the depuration of the blood, to the debility of the stomach, and ultimately to unknown principles, which should be combated according to the more or less vague recollection of successes and the reverses, without seeking to form a correct idea of it.

It is then in persons, in whom gastric super-irritation has been produced by the abuse of stimulants, that bulimia occurs, a disease which is not constantly associated with all those just enumerated, but which is connected with it as depending necessarily

upon the same principle. Bulimia was arranged among the neuroses. This classification, although founded upon the existence of many incontestibly nervous phenomena, could not convey an accurate idea of it, nor lead to the proper mode of treatment. We may at least deduce this from what has just been said; but, above all, it very clearly results from the examination of the following proposition.

PROP. CLIV.

The exuberant assimilation which takes place in bulimial gastritis, is always accompanied with more or less of local and sympathetic pains: which pains ultimately increase to such an extent as to render digestion extremely distressing to the patient, even when the appetite still continues excessive, and terminate in destroying the appetite, producing emaciation, vomiting, &c. and the gastritis sometimes passes to the acute state.

If ontology had not closed the eyes of physicians to the progress and succession of phenomena, they would have discovered that the acute fevers which follow bulimia, do not constitute, in most cases, a different disease, but only a higher degree of the same affection, and bulimia would not have been arranged among the simple neuroses. But all our knowledge commences with isolated ideas, resulting from our impressions. Each impression at first represents to us a different object; it is only by time, observation, and by means of new impressions, which are interposed, as it were, between former ones, that we seize the relations of facts, and that we form of them, those intellectual chains which constitute the sciences. This remark, applicable to many diseases, is particularly so to irritations of the stomach, the different grades of which have remained isolated until our time. As to those now under consideration, it is clear that the augmentation of the power of assimilation cannot be a purely nervous phenomenon; the most simple effort of reason teaches every physician, who possesses any knowledge of anatomy

and physiology, that to digest a large quantity of food, a considerable turgescence of the stomach is necessary; that this vascular erection must be repeated in the liver, and in the pancreas, and that the whole sanguineous apparatus of the abdomen must participate in it. But there is no great difference between this grade of irritation and the acute inflammatory state; but to be able to measure this difference, we must possess some data in relation to the different states in which the sensibility may exist in the digestive apparatus; it is above all necessary to know that the acute fevers of authors are, and can be nothing else than gastro-enteritis.

This latter subject having been superabundantly treated in this work, we can dwell here only on the former.

There is nothing more variable than the sensibility of the stomach. It is at first very obtuse in early life, and it always remains so, if stimulants be not too much indulged in. For a long time even, notwithstanding this abuse, the excitations experienced in the internal gastric sense are limited to the augmentation of the assimilation, and to the excitement of the sympathies. Persons who receive these stimulations, experience gaiety or sadness, agitation, a sensation of being well with exaltation of muscular power, or indeed grief, with diminution of this same force. These sensations are accompanied with more or less remarkable changes in the circulation, in the colour, and in the secretions; but the individuals as yet refer to the stomach only extremely obscure sensations of health, or of uneasiness, which are confounded with what they experience in the limbs or rather with what they think they feel in their whole body. The head often becomes the first painful, and whenever the gastric irritation is exasperated, and threatens to pass into the acute state, a sensation of fatigue and of lassitude is distinctly perceived in the locomotive apparatus. Thus far there is no morbid sensibility, properly so called, in the stomach; often even young subjects suffer several attacks of acute gastro-enteritis, without this sensibility being yet manifestly developed. Certain constitutions have an extraordinary insusceptibility to it, especially in moist and cold climates, and it is that which encourages physicians to the prodigal use of all kind of stimulants. Finally, the period at which the stomach can

no longer be tolerant of these stimulants arrives; pains commence to be felt in it, and unhappily for those who experience them, these pains are temporarily relieved at this early period by the action of excitants, especially those which are agreeable to the gastric sense. The abuse which may be made of these modifiers—this same abuse, which had repeatedly induced acute gastro-enteritis, without causing painful sensibility in the stomach, will no longer develope this phlegmasia except with great difficulty; but it will exalt the nervous susceptibility of the viscus, and digestion will afterwards be always painful, even without the faculty of assimilation having lost any of the unnatural activity which it had acquired.

The seat of these pains is very variable; sometimes they are referred to the hollow of the xiphoid cartilage, more frequently to one or the other hypochondrium; the muscles of these regions, and the periosteum which covers the cartilages of the ribs, sometimes appear to be its principal seat, as is proved by the shrinking of the patients on these parts being pressed, which often leads unphysiological physicians to believe that these pains are purely rheumatic. The chronic phlogosis of the extremities of the stomach causes these pains to be felt beneath the armpits, in the costal periosteum, in the intercostal muscles, and under the scapula; it even causes them to be felt on the top of the shoulder, in the humerus, and many patients consider them as rheumatic; but they soon perceive, on taking certain kinds of food, that the internal surface of the stomach is also very painful; afterwards fits of coughing, of sneezing, and of laughing, awake these pains; the gas which escapes from the stomach, and the mildest food taken into that viscus, seems to force its way through a painful ring, when the principal point of irritation is in the neighbourhood of the cardiac orifice of the stomach; but when it is seated in the vicinity of the pylorus, or in the duodenum, the period at which the second digestion takes place, is infallibly that at which the pains of the hypochondrium, and even the whole right side of the thorax, are renewed. In very many individuals the sensibility becomes exalted to such a degree, that every attempt at turning either the head or body, revives the gastric pain. Some patients are very sensible of this pain in the middle

of the body, under the arch of the diaphragm, and compare it sometimes to a burn, sometimes to a prick, and sometimes to an ulcer; whilst others complain only of the sensation of a ball or of a rampant animal rising in the throat, and obstructing the respiration.

Such are the principal varieties of pain in chronic gastritis. What is astonishing is, that such sensations may be, for whole years, compatible with a perfect, often even a very active assimilation, which maintains the colour, and augments the embonpoint. It must be said, however, that the bloom is never perfect in these patients. Their complexion is of a deep, obscure red, often spotted and livid; their conjunctiva dry, and of a reddish tinge, their tongue commonly red, mucous, and covered with numerous papillæ, breath strong, and they often complain of a bitter taste, which gives them the idea of bile. Thus it is, that the ancients have taken the models of their bilious and melancholic temperaments from persons attacked with this grade of gastritis. What deceived them was, that not withstanding these habitual inconveniences which give a morose character to persons thus affected, their appetite is no sooner satisfied than a sensation of being well, of strength, and of hope, makes them forget all their evils, and draws a veil for some moments over the gloomy future which dispirits them; but their distresses quickly return, and so long as the grade of bulimia continues, these unfortunate sufferers have no other consolation than that of recurring anew to food: some of them join to this habit that still more pernicious one of taking narcotics, and ultimately become unable either to digest, or to devote themselves to any occupation, or taste the sweets of sleep without having taken immense doses of opium or swallowing some stomachic tinctures.

This violent state, we have said, might continue sometimes for several years, but more commonly its termination is much earlier, and is always inevitable. Some commence by vomiting, with acute pains, the food they have taken with so much pleasure: in others the devouring hunger which torments them is replaced by loss of appetite, and the most complete anorexia; they begin to emaciate, and marasmus makes frightful progress; or the gastric irritation in extending in the digestive canal in-

duces acute gastro-enteritis, which is not slow in assuming the most alarming form.

The following proposition will furnish us with an idea of the other chances to which these patients are exposed.

PROP. CLV.

When the long-continued employment of stimulants has greatly exalted the sensibility of the stomach, the treatment is long, difficult, and relapses very readily take place; it is rare in this case for the brain to escape a degree of irritation sufficient to produce hypochondria, and often schirrus or perforation of the stomach closes the scene.

The exaltation of the sensibility of the stomach indicated in this proposition, is one of the most curious and least known phenomena of the economy. A long time is necessary to produce it; a person indulges for a considerable period in the excessive use of wine, spirituous liquors, spices, and medicine, before it is completely developed. At first it is perceived to manifest itself after some excess in regimen or an acute moral affection; but it soon spontaneously disappears, or yields to the temporary use of emollients and cooling drinks, to finally establish itself permanently.

Emetics must be unhesitatingly placed at the head of the causes which most promptly produce it. We have collected some very remarkable examples of this kind of lesion in persons who had been made to vomit for many hours by incessantly repeated doses of tartar emetic, or to whom this remedy had been administered for many days in succession. It is seldom after such errors that the physician does not observe in his patients a permanent exaltation of the sensibility and irritability of the stomach. We have at present under our care, (August, 1826,) a lady, whom her physician in 1813, subjected to emesis for three consecutive days, to cure a supposed gastric oppression. In the excess of his zeal, he thought it his duty to remain con-

stantly with his patient, to make her take, at the stated periods, doses of tartar emetic which he had been so attentive as to prepare himself. The very next day symptoms of disorder in the hypochondriac region manifested themselves, with which the lady had never before been affected, and from that period it has been impossible by any means to calm the irritability of the stomach, or to blunt the painful sympathies which accompany digestion. We have also attended many other neuropathic patients who dated their disorders from repeated emetics, administered to them by the same physician, one of the greatest emetizers we know.

The abuse of purgatives induces, though less promptly, analogous results: this is a fact which we have at present frequent occasion of witnessing, in persons who have taken the purgative of Le Roy, in the manner which this empiric directs to produce its effects, that is, for several successive days. I have seen some persons who have taken it for twenty, thirty, and even forty doses in succession. All these unfortunate individuals finally acquired such irritability of the digestive apparatus that it was no longer possible to establish an equilibrium in it. In them, digestion, defecation, and even the simple passage of matters in the small intestines are painful; many very painful and singular sensations accompany the slightest efforts of the muscles of the stomach and bowels, and are perceived not only in the abdomen, but also in all parts where the cerebral nerves predominate. A most unpleasant buzzing in the ears is the first consequence of these imprudent medications; various pains in the head are soon added to it, weight and fulness of the eyelids, tenderness of the limbs, of the joints, of the periosteum, of a portion of the skin, and often an inexpressible uneasiness, the seat of which cannot be assigned to any particular part. Almost all motion becomes painful at certain periods of digestion; but as these pains are not always referred to the exact portion of the stomach or bowels with which the food is in contact, as most frequently the ingestion of food is followed by a sensation of being well, which causes a momentary oblivion of all sufferings, the patients accustom themselves to associate the idea of being better with that of pleasant food or drink, and make

the sum of their evils an entity, (disease,) for which tonics are the true remedies.

This state of the stomach, which, at certain periods of digestion, but especially when the stomach increases its efforts to expel the digested food, produces pain in certain muscles either in the anterior or posterior part of the body, or in the shoulders or elsewhere; this state, we say, may or may not be accompanied with bulimia; but in all cases it indicates a fixed and permanent irritation, which it would be a great error to suppose purely nervous. We are all acquainted with the structure of the stomach: where would the irritation be seated to be only nervous? In one of the gastric nervous cords? There is no means of verifying this: the visceral nerves appertaining to the eighth pair are alone susceptible of neuralgia, for those of the trisplanchnic have not sufficient sensibility to be attacked with it: but where are the proofs of the existence of this kind of disease? We know not how to verify it during life; for how can we trace a pain in the tract of a gastric cord of the eighth pair? Death has never furnished us a demonstration of it: those who succumb after violent pain in the digestive canal, always exhibit the traces of a phlegmasia in which the mucous membrane has participated; and the early history of it rarely permits us to doubt the irritation having commenced by this sensitive surface.

The existence of neuralgia of the viscera is founded upon that of the external surface; the inference does not appear to us faultless. The cerebral nerves are not the sole ones in the viscera: their action is so modified by their combination with the trisplanchnic, that the sensations which are perceived in them, in no respect resemble those which are referred to the nerves of external parts. Experience is positive on this question; most of the acute pains arising from visceral irritations are rather referred to external parts, than to the viscera themselves: such are those of the stomach, of which we shall presently treat. Purely visceral pains are obtuse; or, if they be acute, as certain colics, they affect a particular character, which distinguishes them from neuralgia, or from that kind of painful sensation which has its seat in the nervous branches of the tegumentary surface. It is so true, that neuralgia, properly so called, does not appertain to the muscular or sensitive nervous branches, unmodified by the

great sympathetic, that the cerebral pairs which are in communication with that nerve, are not susceptible of it, whilst the neighbouring pairs, which are not controlled by it, furnish numerous examples of that affection. We have often to treat neuralgia of the eyelids, but it has never been met with in the proper muscles of the eye. Nothing is so common as neuralgia of the dental nerves; whilst that disease of the tongue or soft palate is unknown. Neuralgia of the spermatic cord is met with; it has never been observed either in the penis or in the ischio-cavernous muscles. The sphincters of the anus and bladder sometimes suffer spasmodic contractions more or less durable, in violent irritations of their mucous membrane, or even from some other causes, but the phenomena of neuralgia, such as may be observed in a branch of a nerve distributed to voluntary muscles, are never remarked in them.

The exaltation of sensibility has not its primary seat then in the special nervous cords of the stomach; but this is not to say, that the nervous system of this viscus is not the principal seat of this exaltation. The internal sensitive surface, in the texture of which so great a proportion of nervous matter enters, is the tissue where this exaltation commences to develope itself, and it is from this tissue that it is diffused through all the neighbouring nerves, without even excepting those which are distributed to the respiratory muscles, to the periosteum, and to the skin.

The region of the viscus where the irritation is most violent must be the most exposed to disorganization: this reasoning appears at first entirely simple, but there may be different modes of irritation in an organ preyed upon by chronic inflammation. The reason of the varieties which the organic alteration may present in the case now under consideration, has not yet been determined; for example, why in some subjects the mucous membrane is softened, reduced to a pulp, or destroyed, whilst it is indurated in others; why one of these modes of alteration affects some one region rather than another. We proceed to offer some remarks on this interesting subject.

Softening, friability, and the reduction into a kind of gelatinous mass commonly occurs in the region of the lower part of the larger curvature of the stomach; and when closely examined, it is perceived that it is not only the mucous membrane that has

undergone that species of decomposition, but that the muscular has participated in it, and that the whole of the cellular tissue which united the three membranes has entirely disappeared. The parietes of the viscus are then reduced to a very thin lamina of serous membrane, commonly so fragile as to tear on the slightest handling, or even already perforated, without any effort on the part of the anatomist. The pyloric region, on the contrary, has manifestly acquired more consistence and thickness; the mucous membrane there presents large folds, the muscular appears more developed, and the cellular and vascular are injected; sometimes even a true scirrhus state is observed there. The portion of the mucous membrane which covers this scirrhus is sometimes ulcerated; but that in the surrounding parts, and at the borders of the ulcer, far from being softened, is, on the contrary, tumefied, indurated, and injected. Finally, though there may or may not be ulceration of the pylorus, it is always manifestly hypertrophied, whilst the lower part of the great curvature is the seat of softening and atrophy.

This is what we have observed during many years in the bodies of those who have long suffered from distaste for food, nausea, and vomiting. On recalling to mind the succession of the phenomena, which have marked the different phases of the disease, in subjects who have presented to us this kind of disorganization, we have always noted the following progression in the appetency and the digestive powers: exaltation of both, notwithstanding the local pains and sympathetic phenomena; corresponding employment of stimulating food and medicine; vomiting of at first mucous, bilious, or sanguinolent matters, and afterwards of food; if this be absent, there is nausea after taking food, and continual but ineffectual efforts of the stomach to reject it; there are all the painful sympathies, all the anguish inseparable from such a state, loss of appetite, cessation of vomiting, often simultaneous alteration of the intellectual faculties, of sight, of hearing, with a state of stupor or idiotism; the ingestion of aliment is so repugnant to instinct, that no power can induce the patients to swallow food. Those who can still utter a few words, or testify their sufferings by signs, make it understood that this repugnance depends upon a violent constriction of the pharynx;

a purely sympathetic phenomenon, and which is, as respects the chronic state now under consideration, what the horror of water is in the acute and convulsive stage of hydrophobia.

We have seen patients live for more than a fortnight in this deplorable state. The period they continue to exist depends upon their general strength, their age, and the amount of materials in reserve. Finally, death terminates all these sufferings, and when the autopsy has submitted to the eyes of the attending physician the organic disorders of which we have just spoken, we think he has some right to connect them with the symptoms in the following manner:—The increase of the appetite, and the local and sympathetic pains that accompany it, have marked, he should say to himself, the chronic inflammatory hypertrophy existing in the stomach; the vomiting or continual nausea during digestion, without, as yet, loss of appetite, corresponded to the greater exaltation of the irritability and sensibility of the viscus, a necessary consequence of the progress of the inflammation and announced the predominance of that phenomenon about the pyloric region. The loss of appetite and the cessation of vomiting, have indicated the fatal period of softening and disorganization of the lower portion of the great curvature of the stomach.

As to the particular cause of this partial hypertrophy, we think that it cannot be found in the inflammatory action solely, but rather in the coïncidence of this action with modifications of another kind. We think that the continual efforts of this region, already irritated and inflamed, to expel matters which the pylorus constantly endeavours to retain, must hasten the softening which sooner or later succeeds to every inflammatory erection; it appears to us, besides, that the articles newly swallowed, constantly coming in contact with a tissue commencing to decay, cannot but hasten the disorganization. In fact they stimulate it, and from the instant in which this stimulation does not end in their prompt assimilation, its result must be to hasten the action of disorganization. Besides, in supposing that the assimilation of the ingesta may be still easily and promptly effected, their prolonged continuance in a phlogosed membrane, and which is beginning to lose its consistence, cannot be innoxious. If it be true that all the actions of the system are induced by stimulants,

it is conceivable that the stimulus of food recently taken into the stomach must differ from that of digested food; the former makes upon the internal gastric sense an impression manifestly agreeable to the *self*, and which induces the viscus to retain it; the second solicits at first without the consciousness of the self, to effect its own expulsion. But if the resistance of the pylorus presents an obstacle to the expulsion, the painful sensation which the self refers to the organ, and the painful sympathies which accompany it, do not permit of a doubt that the stimulation which causes them is distressing to the mucous membrane. But such a stimulation must contribute to resolution by the atrophy of this membrane. The chyme, at first well assimilated, becomes abnormal in consequence of its remaining in the stomach: it becomes more acid than is usual in the second stage of digestion, whence results this inconvenient stimulation under consideration. So long as the organ preserves sufficient energy to empty itself by vomiting, it may be judged that the seat of the internal sense is not yet disorganized. A complete proof of this is obtained by the agreeable impression which new food produces on it; but at length, these so frequently repeated irritations—the irritation from the super-acid chyme, which from its weight always collects at the most dependant portion of the stomach, and that arising from the constant efforts to expel this liquid, become, as it were, a foreign body—these irritations, we say, attain such a point as to injure the mucous membrane, as an internal sense, which is announced by the loss of appetite, and ultimately alter its texture, with that of the mucous tissue connected with it. It is then that the stomach becomes incapable of expelling in any way the articles ingested, which it cannot any longer even assimilate—refuses all food; and then its influence on the brain, without speaking of delirium and hallucinations, inspires a horror of food and drinks, and excites all the acts necessary to oppose their introduction by the mouth.

We have repeatedly seen patients of this kind constantly repel with both hands the vessels placed to their mouth, and when their arms are held, close their jaws with invincible force. Persuaded that this repugnance resulted from a softening of the most dependant part of the stomach, since it followed long-continued

nausea or vomiting, we have objected to the forcible introduction of nourishing drinks by means of stomach-tubes, fearing that it would occasion a fatal perforation; and post mortem examinations, in showing the parietes of the stomach consisting solely of a thin peritoneal lamina, has demonstrated the prudence of such conduct.

In indicating the course which chronic phlegmasiæ of the stomach may run, we have not pretended to insinuate that they must always pass through the same stages, or that the symptoms which correspond to certain of these stages, cannot be met with in another. We could cite, if necessary, examples of the contrary: thus, sometimes in place of experiencing this decreasing course, which leads to maceration, the mucous membrane of the stomach may, as we have above said, contract an acute phlegmasia, and this last suddenly changing its seat, may fix itself in another organ, and cause the death of the patient, before the membrane, the *primum mobile* of this new morbid affection, is altered. In this case, phlegmasia of the pylorus or duodenum, when they have actually existed, is always met with; but the lower part of the stomach, far from being thinned, pale, and softened, is sometimes denser and more injected than in the normal state, or rather it offers no morbid change. In other circumstances, the impossibility of swallowing, or of vomiting, and the loss of appetite, which is its necessary consequence, appear at a period when the forces are far from being exhausted; they depend on a painful and as yet acute inflammation, and after death, in place of the lower part of the stomach being flabby and pale, we find the stomach contracted, thickened, having large, firm, and highly injected wrinkles. Cases of this kind have been related in the History of Chronic Phlegmasiæ.

Although perforation of the stomach is frequently the result of phlegmasia of its lower part consecutive to that of its pyloric region, it may be produced by partial primitive phlegmasiæ, which extend themselves perpendicularly to the axis of the stomach, instead of spreading superficially over its surface. We have frequently repeated this for twelve years in our public and private lectures, when any one refused to refer spontaneous perforations of the stomach to inflammation. These two modes may

also take place as well in the tissue of the membranes as in that of the skin, and the least credulous may be convinced of it by post mortem examinations. As to the causes, they do not differ from those of other gastrites. The proposition further, in ranking perforation among the possible effects of the irritation which produces bulimia, does not assert that this mode of alteration cannot be coïncident with another group of symptoms.

It is the same with the mode of lesion of the action of the brain corresponding to hypochondriasis: it often coïncides with the grade of gastritis indicated in the proposition; but as it may also correspond with many others, it does not constitute one of its essential characters; it would be superfluous for us to dwell upon this subject.

PROP. CLVI.

Acute inflammation often passes from the mucous membrane of the digestive canal to the peritoneum.

This fact, simple as it may appear at first view, is however of great importance considered in its relations with the history and exercise of the healing art. It is in consequence of not being acquainted with this consecutive peritonitis, that the ancient authors have uttered so many extravagances respecting the meteorism of acute fevers and the *sensibility of the hypochondriac regions*, which accompany it whenever the inflammation of the intestines has really penetrated to their serous membrane. But when this double phenomenon has been followed by death in the space of thirty-six or forty-eight hours, and the post mortem examination has discovered the cause in a point of inflammation of the ileum, which, deeper than the others, has traversed the intestine with or without perforation, what interest is there in any of the dissertations of writers who have had no idea of such a mode of propagation?

If we now view the fact in its practical relations, its importance to the physician in the treatment of the case becomes evident, by showing the importance of removing as early as possible all the renitent and painful spots which are perceptible through

the abdominal parietes, and by inspiring circumspection in forming the prognosis of supposed prolonged essential fevers. In fact, in most of these cases, that is, when the group of symptoms which corresponds to the supposed essential fevers, whether adynamic, nervous, slow nervous or hectic, are prolonged with some obstinacy, we may, especially in persons who have been stimulated from the commencement of the disease, represent to ourselves the mucous membrane of the intestines as riddled by aphthous ulcerations; and there is little to prevent one of them perforating the serous membrane which forms the base of the ulcer, and producing a fatal peritonitis. We say fatal, because these diseases give no grace when they supervene on disorganizations of the abdomen: they are rarely prolonged more than three days. Sometimes even this fatal peritonitis occurs without perforation, and solely by the propagation of the inflammatory irritation, by means of the cellular tissue uniting the membranes of the intestines. The physician, who once in the course of his life has been a witness of such a propagation will always afterwards be cautious how he gives a prognosis of a prolonged acute fever, and will take great care how he promises very favourable results when he undertakes to conduct a treatment improperly commenced. We have frequently expressed it as our opinion, that many peritonites, in appearance primitive, commence in an irritation of the internal surface of the alimentary canal. It remains to determine, by authentic observations, the cases in which these phlegmasia have had their origin in the tissue of the peritoneum itself. But this is not the occasion to investigate that question.

PROP. CLVII.

Acute hepatitis is never fatal unless there also exists gastro-enteritis, peritonitis, or inflammation of some of the organs of the chest, or of the contents of the cranium.

After having repeatedly found gastro-enteritis, peritonitis, pleurisy, carditis, &c. in cases where he suspected only hepatitis, the author has been led to this very simple reflection: *For*

a person to die, it is necessary that the principal instruments of life should be seriously injured. In fact, so long as the disorder is limited to the secondary organs, death does not take place; and here, speaking only of phlegmasiæ, no one dies of a simple uncomplicated cystitis, nephritis, metritis, nor even hepatitis; that is, unless the irritation is propagated to the viscera which preside over functions more important than those performed by these organs.

After having verified the fact as relates to the viscera of the second order, the author was naturally led to inquire whether it is equally true respecting the external organs, that is, the skeleton and soft parts by which it is covered. It appears absolutely demonstrated that inflammation may pursue two opposite courses, developed in the viscera of the first order; it often is propagated to those of less importance, or is repeated in the skin or in some parts of the skeleton. (See the propositions on the metastases.) 2d. Arising in one of these last tissues, the inflammation may, if it is not very intense, remain in them for a long period, without the viscera participating in it, but it is entirely necessary that it should ultimately propagate itself to them either by the progress of age, or by its assuming an unusual degree of activity, when the danger is always in direct proportion to one of these two conditions. The greater the external irritation is, the more violently will it affect the viscera it attacks; and the longer it remains in its first seat, the more difficult will it be to drive it from the second.

Such are the laws which govern medical surgery. They were long unknown, but have become finally understood: they alone have explained the resorptions, the traumatic fevers, and the supposed disorders of the humours, considered even in our days as foreign to external wounds. Some celebrated surgeons, who have not remained, with their preceptors, the slaves of old routine, at present know that the irritation of a wound may be rendered purely local, and the development of the fever termed traumatic, be prevented. They have also discovered the advantages to be derived from a local antiphlogistic treatment, in old external suppurations and old ulcers, whether to effect a cure, or to prevent the formation of foci of chronic inflammation

in the viscera, a common cause of hectic fever, and which induce decay and death.

PROP. CLVIII.

Acute nephritis is not fatal, except when complicated with inflammation of some of the principal viscera.

We will not repeat, respecting this phlegmasia, what we have just said in relation to the preceding; we will solely observe, that in these two propositions, the acute stage only is referred to, although the remark is equally applicable to the chronic: it is because we propose to ourselves to elucidate the prognosis, and to furnish data for the treatment at that stage of the phlegmasia at which the conduct of the physician decides in a few moments the fate of the patient. The practitioner who is aware that the nephritis or the hepatitis may induce a poly-splanchnic inflammation, in which rests all the danger, does not content himself with moderating the febrile reäction by a few bleedings, and does not trust to nature the completion of the cure he has just prepared; nor is he anxious to gratify a reviving appetite, and to replace the blood he has detracted. He knows that stimulations of the gastric passages expose the patient to the double danger of having the phlegmasia, which was just yielding, renewed, or of causing its transfer to a more important viscus; and if this metastasis is already effected, he is not ignorant to what part he ought to direct his remedies. An appearance of bilious disorder, supposed glairy engorgement of the kidneys, following somewhat copious bleedings, do not impose upon him. This illusory appearance would not determine him to have recourse to chologogues, or to active diuretics, under the specious pretext of giving a *spur* proper for terminating the effort of resolution, which the weakness of the patient rendered incomplete. He knows that this spur cannot effect what it is proposed to attain; he fears that it will revive an old focus of phlegmasia in the gastric or pectoral organs, and which is disposed to assume a new degree of violence. If faults have been committed by an

uncircumspect practitioner, the physician who has well considered the two propositions upon which we are now commenting, knows how to distinguish amidst the confusion of symptoms, the different parts where the irritation has become predominant. He will never be seen entirely preöccupied by the first phlegmasia, to shut his eyes to its extension, or embrace the vague suspicion of a consecutive essential fever, the progress of which must be watched in order to deduce from it the mode of treatment. Our physiological physician knows that it can be cured only by an antiphlogistic treatment, and that in such case all that is to be done is to apply this treatment to a series of inflamed points, which are successively added to the first and unextinguished focus.

PROP. CLIX.

Acute peritonitis in puerperal women, generally commences with inflammation of the internal membrane and the whole parenchyma of the uterus.

Yes: it is the phlegmasia consecutive to the detachment of the membranes and of the placenta, which, from the inflammatory disposition of the woman, traverses the uterus and spreads over the peritoneum. This mode of propagation is analogous to that by which the phlegmasia of the intestinal mucous membrane propagates itself to the same serous tissue, and, in puerperal metritis as well as in gastro-enteritis, it is important not to be ignorant of it, in order to avoid every thing that may excite this fatal propagation, and to know how to prevent it, by restricting the inflammation to the tissue primarily affected.

The anatomico-pathologists who have attentively examined the uterus after puerperal peritonitis will have doubtless remarked, that sanguineous engorgement is more considerable at the place of insertion of the placenta than any where else. The inflammation following delivery predominates then in that place; and if renitence or any sympathy enables the practitioner, in a patient threatened with peritonitis, to discover that place, local depletion must be resorted to immediately over it. Is

it not thus that renitence, pain or meteorism become predominant in a circumscribed region of the abdomen, during the progress of an acute gastro-enteritis, is dissipated by leeches, a cataplasm, or the local application of ice, which prevent the explosion of a threatening peritonitis?

PROP. CLX.

Prolonged irritations of the mucous membrane of the vagina almost always produce inflammation of the cervix uteri and of the ovaries; hence scirrhus, cancers, &c.

It is an observed fact, that every kind of stimulation of the vaginal mucous membrane sympathetically irritates the ovaries. It should not then excite surprise that hysteria is often coïncident with venereal excesses, and that it should follow protracted inflammation of the vagina. It is a fact, the truth of which no one at present doubts, that this inflammation attacks the neck of the uterus, and may thicken it by implicating its mucous follicles and its lymphatic system, and it would be superfluous for us to dwell upon it.

PROP. CLXI.

Scirrhus of the cervix uteri is often the effect of the violence suffered by that part during delivery.

The old habit of considering only the phlegmonous form of irritation, as inflammation, has not been productive of less evil as relates to the uterus than to the other organs. Wholly absorbed by the mechanism of parturition, accoucheurs appear to have neglected every thing else. They speak of ruptures of the neck of the uterus as very simple accidents, and which would in a few days get well spontaneously. Nothing is however more common than the prolongation of these phlegmasiæ into the chronic state, and definite degeneration into cancerous affections. Since there

has existed in France physiological physicians, these fatal conversions begin to be less common. Physicians have perceived the necessity of subjecting women who have just been delivered, to rigid diet, especially when the labour has been long, unusually painful, or very severe, as well as in all cases where art is reduced to the painful resource of instruments; and since then, chronic phlegmasiæ of the neck of the uterus have become less common amongst us. We say less common, for unhappily there are many accoucheurs, and especially midwives, who entertain but a very imperfect idea of the phenomena of inflammation. These persons cannot imagine that phlogosis of the neck of the uterus, whenever it has suffered much, may become, in the acute state, the cause of a metro-peritonitis, and in the chronic, of a scirrhous affection. Some of them entertain these fears, but they do not think it necessary to have recourse to very rigid diet to prevent unfortunate results. They think that they should not forbid newly-delivered women, enfeebled by a long labour or loss of blood, a few cups of broth, or even a little wine, and that diet is to be observed only on the accession of the milk fever. This security becomes the source of a multitude of evils: it is rare that women in child-bed absolutely require such restorative means. Nothing is simpler or better founded than for restoratives to be allowed to hearty country women, whose labour has been short and easy, and who must nourish their children; but whenever the head of the child has been delayed in the pelvis, that the neck of the uterus has yielded with difficulty, and has suffered some unusual violence, it is the duty of an honest physician who would prevent all accidents, immediate or remote, to allow to the newly-delivered woman only aqueous or mucilaginous drinks, until the inflammation of the sexual parts are nearly cured. We say more: if notwithstanding the severity of the regimen, the inflammation, instead of proceeding towards resolution, menaces about the third day to assume a phlegmonous character; if it suppresses the lochia, renders the skin dry, prevents the mammæ from being turgescent, raises up the hypogastrium by rendering it painful, abstinence is not sufficient; bleeding, especially local, is necessary, in order to prevent peritonitis. Some women, in truth, escape this disease without their being

subjected to new losses of blood. We reply, that such cures, which are always rare and difficult, must not be trusted to. Too often, in fact, the phlegmasia remains local, and these women, after having long suffered from stiffness, pain and tension in the region of the uterus, after some years, succumb to the consequences of scirrhus of the neck of the uterus.

We would not have said enough upon this important matter, if we were not to give notice that chronic irritations of the os tincæ were not always an obstacle to impregnation. We have met with a considerable number of women affected with chronic inflammation of the neck of the uterus, who have become pregnant and gone to their full term. It is the same with chronic phlegmasia of the uterus as with that of all the other viscera: the functions of organs affected with inflammation of some intensity, are at first interrupted; but if the phlegmasia is not sufficiently intense to rapidly disorganize them, if it gradually weakens them, if it continues in a slight degree, these organs become habituated to it, and return to the performance of the functions as before, until the morbid nutrition established in them, has disorganized them to such an extent, as to once more compel them to suspend their functions. It may even happen, and it very often does happen, that an increase of irritation accidentally developed, and immediately calmed by nature or art, produces several of these suspensions, which are then only temporary. The digestive organs and the lungs constantly present similar vicissitudes; the sexual organs are not exempt from it; a woman who had been rendered for a long time sterile, from inflammation of the neck of the uterus, after her first delivery, may become fruitful and have several children, without the inflammation of the neck of the uterus being entirely removed. It is even unquestionable that gestation suspends the march and progress of the disease, which is also proved by a multitude of facts which attest the pathological revulsion. The period of the cessation of the menses finally arrives; it is then that the inflammation of the neck of the uterus, hitherto palliated by the menses, the lochia, and even by pregnancies, begins to grow worse, and the longer the morbid hypertrophy has existed, and the more extensive it is, the less curable will it be. It is thus

that a fault committed in a first lying-in by an imprudent midwife, or by a physician ignorant of physiological pathology, becomes the cause of a painful and premature death, which snatches away a mother of a family from every thing that is dear to her, at the moment when the cessation of the sufferings accompanying fecundation, promises her a long and happy career.

PROP. CLXII.

Painful menstruation indicates a perpetual focus of irritation in the cervix uteri, and cancer of this part often results from it at the period of the cessation of the catamenia, when this irritation is not removed long before that period.

Pain being a perception, should be regarded as one of the most variable phenomena of the living economy. Care must consequently be taken not to understand this proposition in an absolute sense. Some very nervous women have their menses habitually painful, although they have no chronic inflammation in their uterine apparatus; in others, on the contrary, sensibility is so obtuse, that phlegmasia of the neck of the uterus runs on to ulceration without its revealing itself by any well-characterized painful sensations. This should not, however, prevent habitually painful menstruation from awakening the attention of the practitioner, and inducing him to examine the neck of the uterus, since the cases alluded to are exceptions to a general rule, arising from very unusual idiosyncrasies. We shall here again have recourse to comparisons, which are always just, when we take as their terms the organs of the same system. Some persons have painful digestion during a long life, without incurring the danger of scirrhous alteration; others suffer no pain from their gastritis, until scirrho-cancerous degeneration is effected; but all this is no obstacle to the great majority of those who cannot digest without pain, uneasiness, and sympathies which more or less affect their intellectual functions, being really attacked with a chronic phlegmasia of the digestive canal and menaced with all the consequences which it may involve.

We will make the same remarks in relation to persons who have an habitual cough, dyspnœa, excessive expectorations, and pains in the side; all such persons live with irritations, which, sooner or later, more or less effectually accomplish the disorganization of their viscera, and they must sooner or later suffer the consequences. The uterus, long irritated, is not less exposed than the other tissues, and far from forming an exception to this rule, is one of the organs which is most abused; the causes which may act on it are exceedingly numerous; whenever it suffers the physician should take the alarm and seasonably have recourse to the antiphlogistic treatment. It is the best means of daily lessening the slow and painful deaths so common at present in the large cities, and particularly in the capitals of civilized Europe.

PROP. CLXIII.

Peripneumonia often commences with catarrh or inflammation of the mucous membrane of the bronchia. The superior lobes of the lungs are then the principal seat of the inflammation; and if this inflammation be chronic, it developes tubercles in the summit of the parenchymatous structure of the lungs and produces phthisis.

This is at present a truth of public notoriety; but it is not as yet adopted by all physicians. Those who profess the physiological doctrine are the only ones who have hitherto understood it. Others affect always to separate the entity catarrh from the entity phthisis pulmonalis. Between the most intense pneumonia and that which is susceptible of the greatest chronicity, many diseases have been established; there is false peripneumonia, *peripneumonia spuria*, catarrhal fever, and catarrh: besides this they also admit of nervous, gouty, rheumatic, &c. coughs. It appears to us to be well, notwithstanding all that we have already said on this subject, to recur to it, in order to facilitate the understanding of the proposition we have just stated.

The first fact to be noticed is, that the greater number of cases of pneumonia, and many of pleurisy, have commenced with catarrh or phlegmasia of the bronchiæ. Physicians and nosologists

are then wrong in establishing so much difference between these diseases. The progress of the irritation is very easy to be followed in many cases. It is seen first to develope itself in the bronchiæ under the influence of cold; it is neglected, and it soon extends to the parenchyma, as is shown by the dull sound, the ronchus, the viscous and bloody expectoration, and a more distinct febrile action. These pneumoniæ are generally seated in the upper part of the lungs; but the patient continues to shut his eyes to his condition, a not unusual thing among soldiers; then the inflammation extends through the parenchyma, and spreads over the serous membrane, where it produces true pleurisy, rather however of the middle or inferior regions of the membrane, than of the superior, and the disease thus becomes a complication of bronchitis and peripneumonia. Such are the facts which the author has wished to point out in the acute stage, which offers no impediment to the existence of other facts equally susceptible of proof, the cases where the inflammation first begins in the parenchyma or in the pleura. Let us now devote our attention to the chronic stage.

Inflammation of the bronchial membrane constitutes, as we are taught, pulmonary catarrh. Such is the point at which Professor Pinel has left the science; but his description is applicable only to bronchial catarrhs, which run their course regularly and terminate by a thick expectoration. But when the catarrh is protracted, and is accompanied by a febrile action with exacerbations and sweats, the nosographer abandons us, and we are compelled to seek the abstract model of this new group of symptoms in the genus pulmonary consumption, where we find its incurable cause to be tubercles. Should we wish to seek light from other sources, we are quickly lost in entities. Authors will speak to us of mucous phthises, and will quote us some cases of cure, without adverting to the fact that the word phthisis involves the idea of a consumption of the whole body, occasioned by the disorganization and even the putrefaction of the lungs. Some practitioners will represent to us a grade of cough with expectoration and fever, as the entity catarrhal fever, but if this group of symptoms becomes changed, and assumes the aspect of phthisis, they will also make it take the name with the epithet

catarrhal, and some of them will consider it a different thing from what they call mucous phthisis, whilst others will view it as identical.

To relieve us from embarrassment, we shall perhaps have recourse to the anatomico-pathologists. France may boast of possessing some of these, who have acquired some authority in the learned world. Well, these writers teach us that if prolonged catarrh, or chronic catarrhal fever, or mucous phthisis, or catarrhal phthisis, get well, care must be taken not to retain the epithet phthisis: they will allow these affections to be termed only catarrh from irritation or relaxation, essential catarrhal fever or phlegmasia; but not phthisis, because the essence of phthisis is tubercles, and to be incurable. If, however, after an apparent cure the patient falls some months afterwards into pulmonary consumption, having always preserved a slight irritation of the chest, the same anatomico-pathologists will recur to their first assertion, and will declare that tubercles, formed anteriorly to all morbid state, having finally produced disorganization of the lungs, and that the disease is really worthy of the title of pulmonary phthisis.

It is thus, that the practitioner, always floating amidst a host of different entities, in relation to catarrh alone, will scarcely ever be able to distinguish that which is presented to his view. It is after having experienced this embarrassment, that the author has collated the fruits of his own researches, in the proposition at the head of this commentary. He has completely verified the fact, that the same bronchitis which produces acute pneumonia and pleurisy, may cause a chronic form of these phlegmasiæ. In fact, experience has satisfied him, that whenever bronchial catarrhs are considerably prolonged by the renewal of the cause which has produced them, the action of cold, that the irritation implicates the spongy substance of the lungs, and that it most commonly predominates in the upper part of these organs; and this may also be produced by other causes, besides bronchitis, induced by the influence of cold. The two sides are rarely simultaneously affected; the phlegmasia is almost always more severe in one side than in the other; often even a single bronchia is affected, at least for a long time, and its corresponding pa-

renchyma is greatly disorganized before the opposite side suffers much.

In reflecting upon this march, we will not be astonished that chronic inflammation may, like the acute, reach the pleura, and produce consecutive pleurisies. They do not at the superior portion of the lungs, because there the adhesions, produced by the chronic pneumonia, is an obstacle to the formation of false membranes and sero-purulent collections; but they frequently occur at the middle, as well as at the lower portion of the lungs, posteriorly, as well as anteriorly; and sometimes the purulent abscesses, which are formed in the parenchyma, opening into that of the phlegmasia of the serous membrane, a communication is established between the bronchiæ and the collection in the pleura, which, from time to time, induce an evacuation of the latter.

It remains for us to treat of tubercles, which we shall do in the proposition specially devoted to that subject.

PROP. CLXIV.

Peripneumonia of the middle and lower lobes of the lungs often commences without having been preceded by bronchial catarrh: if it becomes chronic, tubercles are developed in it and phthisis supervenes.

Those peripneumonies are here indicated, which occur suddenly after a more or less violent chill, without having been preceded by catarrh. It even often happens that the inflammatory congestion which constitutes them, is preceded by vague pains, referred to the muscles of locomotion, or to the articulations, and which seem to abandon these organs, and to suddenly fix themselves in the parenchymatous tissue of the lungs, or in the pleura. But we have rarely observed these irritations to affect, at their commencement, the upper part of the pulmonary lobes, which correspond to the clavicular region; whilst they are daily observed in the middle as well as at their inferior portion, both anteriorly and posteriorly. We have equally remarked, that the cases in which pericarditis accompanies pleurisy or pneu-

monia, are most frequently among those in which the phlegmasia commences in that manner, but we would not assert that this was constant, for it appears to us, that we have met with pericarditis, consecutive to bronchitis. However, it ought not to be forgotten, that persons attacked with this latter phlegmasia may be affected by cold, and contract pleurisy or pericarditis, entirely independent of their catarrh.

When the primitive pneumoniæ thus formed in the inferior or middle regions of the pulmonary lobes are prolonged and induce pulmonary phthisis, tubercular degeneration is not always present: it may, whatever has been said of it, form true phlegmonous abscesses in the spongy substance of the lungs. All the ancient physicians were of this opinion, but some modern ones have denied its possibility. We, who have observed them independent of any tubercular alteration, or any pleuritic collection, are well convinced that they may become the cause of a pulmonary consumption. It will be then necessary to repair the omission we have made of this cause of phthisis in the proposition under consideration, and to give it the following form:—

"*Peripneumony of the middle and inferior lobes of the lungs often commences without being preceded by bronchial catarrh: if it becomes chronic, either abscesses form, or tubercles are developed there. Phthisis may be the consequence in the first case; it is the inevitable result in the second.*"

PROP. CLXV.

Pleurisy causes atrophy of the lung of the diseased side from the purulent collection which it produces, most frequently without inducing inflammation of that lung; but at the same time pneumonia is sometimes developed in the lung of the opposite side, and if this becomes chronic, phthisis is there developed.

The facts indicated in this proposition have been attentively observed by the author himself, and we think that they may be

explained in the following manner: when the sero-purulent afflux rapidly takes place in a pleural cavity, the parietes of which are actively irritated, the blood accumulates in the opposite parenchyma; this parenchyma, subjected to an excessive respiratory action, and over-stimulated by the accumulation of blood, does not long resist the impending inflammation, unless preserved by hæmorrhage or loss of blood. These species of pleuro-pneumonies are not less dangerous than the double pneumoniæ and pleurisies. Both are often fatal in the acute stage; but when pneumonia does not occur until long after the pleurisy of the opposite side, and it is not sufficiently intense to produce a violent febrile state, and occasion a rapid congestion, it passes to the chronic stage if it be not cured by art, and the patient succumbs to pulmonary phthisis.

PROP. CLXVI.

Pleurisy which predominates in the pulmonary pleura with or without effusion, and atrophy of the lung which it covers, sometimes induces inflammation of that lung, and may, if the inflammation become chronic, develope tubercles in it.

We have just seen pleurisy occasion pneumonia of the opposite side; here the former induces the latter in the same side. We do not take into consideration here the cases cited in Proposition CLXIII, where pneumonia precedes the pleurisy, but those in which it is evident that the pleurisy is simple; for example, when, after the cessation of the pain in the side, the extinction of the febrile heat, the abatement of the pulsations of the heart, a dull sound is observed in the spot corresponding to the former pain and ægophony, whilst the air readily penetrates the summit of the lobe beneath the clavicle, and freely passes through the whole extent of the opposite lobe. In fact, such a state of things positively indicates that the two lobes are healthy, at least in their parenchyma, and that one of them only is in

part compressed by the liquid product of the pleurisy. The patient is then exposed to many risks. We do not allude to what occurs in the other cavity, since this has been considered in the preceding proposition; the sole question is respecting the side in which the pleurisy is seated. If the irritation of the pleura continues to diminish, the collection is absorbed in the course of a few weeks, and the patient is entirely cured; but if, instead of abating, the pleurisy is exasperated, the inflammation extends from the pleura to the pulmonary parenchyma, and follows a course the reverse of that noticed in the commentary on Proposition CLXIII, there is then chronic pleuro-pneumony of the same side, instead of pneumo-pleurisy, as we have above observed. The fever is more or less violent; purulent expectoration may occur, as well as communication of the abscesses of the parenchyma with those of the pleural cavity. The details are to be found in the chapter on *Pleurisy* in the *History of Chronic Phlegmasiæ.*

We have often found, in post mortem examinations, the most evident traces of the mode of propagation of the disorganizing irritation. The pleura was red, thickened, granular, and tubercular, and the parenchyma participated in this kind of alteration the nearer it was to that membrane.

PROP. CLXVII.

Tubercles which succeed to inflammation of the internal membrane of the bronchia and air-cells, are engendered in the same manner as those of the mesentery in chronic enteritis.

PROP. CLXVIII.

I have never seen tubercles without preceding inflammation. Those found in children at birth, do not appear to me independent of this phenomenon.

We have now arrived at the consideration of the cause and mode of formation of tubercles. The first of these two propositions furnishes us with the fundamental idea on this subject. In fact, the imagination readily follows in the living, inflammation of the whole extent of the bronchial ramifications to the interior of the vesicles, afterwards in the dead body we see unequivocal traces of this phenomenon. It is further stated in the proposition, that in these places the inflammation engenders tubercles in the same manner as it causes those of the mesentery in chronic enteritis. Let us then examine what occurs in this latter disease. Enteritis, in irritating and tumefying the mucous membrane of the intestines, irritates and tumefies the ganglions of the mesentery, and renders them what is termed tubercular. It is then clear that the author alludes in this proposition only to pulmonary tubercles, which in form, colour, and size, resemble those which are constantly met with in the mesentery, where they consist of masses of lymphatic vessels, more or less mingled with other vessels, that is, the parenchymatous tissue of ganglions affected with tubercular degeneration. The author has then, in this proposition, stated that tubercles may form in the lungs, consisting entirely of masses of ganglions degenerated by the influence of chronic inflammation of the bronchiæ; and the proof of this rests upon post mortem examinations, which actually exhibit around inflamed bronchiæ more or less numerous and larger or smaller groups of lymphatic ganglions thus affected. Moreover, as tubercular productions analogous to these latter may form elsewhere besides around the bronchiæ, the author has said that the lymphatic vessels of some other part, in which they are not arranged in ganglions, or rather where they do not make part of a lymphatic ganglion, may, under the influence of inflammation, become developed, tumefied, and altered so as to produce tumours resembling those which compose the lymphatic ganglions of the mesentery and lungs affected with tubercular degeneration. To prove this new assertion, it is sufficient to refer to post mortem examinations, which constantly present to our view tubercles entirely similar in parts of the body, where in a normal state, the existence of ganglions has never been demonstrated. Finally, in the conclusion of the pro-

position it is affirmed that the author has never seen tubercles in the lungs without preceding inflammation, and he does not except those which occur in new-born children. By constantly referring to the comparison that has been made between tubercles of the lungs and those of the mesentery, it is seen that the question is still respecting ganglionic masses transformed into tubercles. But does that comprise all the alterations which authors have designated by the term *tubercles?* We shall soon meet with a proposition in which this important question will be answered.

PROP. CLXIX.

Tubercles may form in all constitutions in which chronic inflammation of the lungs and intestines prevail; but they are larger in persons predisposed to irritations of the lymphatic system.

This proposition requires no commentary; it will suffice to remark that it refers only to the tubercles under consideration in the two preceding propositions. It especially relates to children, who, in their chronic gastro-pulmonary inflammations, always exhibit the tubercular degeneration.

PROP. CLXX.

Cartilaginous, osseous, and calcareous granulations, melanosis, scirrhus, encephaloid tumours, and cancers of the lungs, are produced in the same manner as ordinary tubercles.

This signifies, in the words of Proposition CLXVII, taken in their strictest sense, that these kinds of alteration are produced in the same manner as tubercles of the mesentery; that is, by an inflammation of the nearest mucous membranes; but this is not the whole meaning of the author. He is of opinion that irritation presides over the formation of all these kinds of alterations,

but he does not believe that the inflammation of a mucous surface, properly speaking, is an indispensable condition to the formation of tubercles, &c. (Prop. CLXVII,) and to that of the alterations spoken of in the present proposition. What proves clearly that such was not his opinion at the time of the revision of the propositions, is Prop. CLXVI, on which we have just commented, and in which chronic inflammation of the pleura is seen to become the cause of tubercles that appear in the nearest portion of the pulmonary parenchyma.

The idea of the author in 1821, and even much earlier, since he expressed it in 1808, in the *History of Chronic Phlegmasia*, was, that tubercles which are seated in the lymphatic ganglions, those which appear in the tissues where these ganglions have not been discovered, cartilaginous and osseous granulations, melanosis, scirrhus, cancers of the lungs and even of all parts of the body, are owing to irritation. He has exacted, for the formation of these morbid productions, that the inflammation should always be marked; it suffices, from what the author has said in the *History of Chronic Phlegmasia*, pages 486–7, 2d ed. 1816, and in the *Examination of Medical Doctrines*, page 445, &c. 1st edition, 1816, in refuting MM. Bayle and Laennec, and in several other passages in these two works, that the parts should be forced to a long protracted supernormal action, for the different kinds of organic alteration just mentioned to develope themselves there, if the patients are already predisposed to them. He has likewise added, that in his opinion, this predisposition consisted in a greater irritability than common, that is, supernormal, of the lymphatic system; and he believed that he proved this assertion, in stating numerous facts which attested that children, and those constitutions most allied to them are also the most exposed to these kind of alterations.

He has even gone further; he has maintained that the irritations which produce those kinds of alterations have a double origin, for sometimes they arise from an inflammation, properly speaking, of which they appear to be the termination, and sometimes they develope themselves without previous inflammation. The first is called by him their acute origin, and the second, their chronic origin.

Separating, according to this, the internal action which produces tubercular, scirrhous, encephaloid, and cartilaginous degenerations, from the inflammatory action which may not preside over their development, and which sometimes intervenes and sometimes is not perceived during their progress, he has named the first, sub-inflammation, reserving to himself to profit by the discoveries which may be made by anatomists, either to confirm his views, or to refute them himself, if facts pronounce his condemnation. The researches of Professor Dupuis at the school of Alfort, on tubercles in animals, have not shaken the belief of the author of the *Propositions*, because he regards the vesicular granulations, which this able veterinary surgeon considers as the origin of tubercles, to be one of the forms of the action of sub-inflammatory irritation, the generator of alterations in tissues which are not very sanguineous.

However, without intending to make minute researches on the different alterations of the lungs, the author of the *Propositions* was shocked by constantly hearing physicians designate the variously coloured granulations, and the white and black spots which are met with in a great number of phthisical patients, by the name of tubercles, or to refer them either to a tubercular principle or to a tubercular matter; he was convinced, from a great number of cases of pulmonary consumption, that in many patients chronic inflammation destroys the lung, whether it be ulcerated or not, not always and solely by tubercles analogous to those of the ganglions of the mesentery, or those of M. Dupuis, but in causing the lung to undergo numerous alterations, subordinate to its mode of organization. This is what the author has habitually taught in his lectures every year, advising the students to examine thoroughly the differences which might be presented by alterations bearing the closest resemblance to each other. The author testified no eagerness to make public through the press, ideas which he was desirous that all the world should profit by, and even now he is in no haste to publish many other points of doctrine which he has maintained in his lectures for the last twelve years. It was only incidentally that he published in the *Annals of Physiological Medicine*, a portion of what he was in the habit of repeating in his lectures on the the-

ory and practice of medicine. In extracting this passage, we will prove to certain modern writers, that the author has seen something more in phthisis pulmonalis than inflammation of the lymphatic vessels.

The case was that of a young lady who died from gastro-enteritis, and is detailed in Vol. VII, page 546. After which, page 562, the author thus expresses himself:—

"I enter into these details because they give a just idea of what is met with in a great majority of cases of phthisis pulmonalis. Those where the lungs present large, white, rounded masses, some consistent, the others softened and reduced to a caseous matter, or destroyed, leaving a cavity; these phthises, I affirm, are the most rare, (with us.) I have met with them in Holland and Belgium; but after our army had left those countries, they appeared to me to be of rare occurrence. Red induration, with small granulations and lymphatic effusions, (caseous,) appeared to me to be the most common, and I believe that this is the result of uncured pulmonary inflammations. But do these granulations, developed in lungs hepatized by the phlegmasia, merit the name of tubercles? If we pay attention only to the general signification of this word, which means small tumours, eminences, tuberosities, or inequalities more consistent than the tissue in which they are seated, it would no doubt be applicable to them; but if it is reserved for spherical bodies, at first whitish, opaque, or semitransparent, afterwards susceptible of resolving into pultaceous matter,* which closely resembles old cheese, this word will not be applicable to the granulations found in the lungs of our patient. Let any one take the trouble of reflecting on the multitude of facts presented to our observation, and he will see that the organs which contain many lymphatic ganglions, mucous follicles, or glandular grains, cannot experience inflammation without these small bodies becoming tumefied. If the inflammation is slight and rapidly disappears, they resolve and regain their normal state; if it is acute and violent, they are destroyed by the suppuration; but if it is chronic, they degenerate according to their organization, and the tissue of the organ presents a multitude

* Such in fact as they are described by M. Laennec.

of granulations differing more or less in consistence and appearance. Take a mucous membrane, for example, which we know is filled with mucous follicles; as soon as this membrane becomes inflamed, all these bodies swell, and the membrane appears granular in every part; when the inflammation subsides they reässume their former condition; if it persists they form elevated patches, if they are confluent; they render the membrane rugose if they are distinct; but if the inflammation obstinately continues they are destroyed, and their destruction occasions that of the membrane. Examine the environs of a deep ulceration occurring in a well-constituted mucous membrane, as that of the glans penis, the mouth, the labia, the trachea, or the digestive canal, and you will find these environs filled with granulations, situated in the proper tissue of the membrane equally in a state of tumefaction, while the mucous membrane itself will be partially or entirely destroyed in the centre of the ulcer.

If some lymphatic ganglions are met with in the vicinity, they will be tumefied and red, if the inflammation is recent; mottled or entirely white, if it is of long standing. Observe the cellular tissue interposed between these different organs; it will be more or less tumefied, and its colours will vary according to its locality. In those, where it is not lymphatic, it will appear grayish, oftentimes black, of various degrees of consistence; in parts where it contains fat, its appearance will be lardaceous. I will abstain from more minute details; they are readily supplied; *I have said enough* to enable a physician to form an idea of what takes place in lungs attacked with phlegmasia. If this is violent and rapid, the membrane will be of a red-brown colour, resolved into a blackish jelly, or suppurated; if it is chronic, or not very intense, the mucous follicles of the bronchial membrane, which although reflected, is still formed on the same plan as the other membranes of relation, will be indurated, softened and the first destroyed; this takes place in all apparatuses communicating with the exterior; the lymphatic tissue will be engorged and acquire a volume proportionate to the temperament of the individual; *the small sacs at the extremities of the bronchiæ, will be engorged, degenerated or destroyed;* the areolar tissue will be more or less altered, and indurated; it will be found scirrhous, softened, torn

or dilated; it may contain fibrine, cruor, more or less concrete, or more or less decomposed, puriform, caseous albumen, sometimes even in a dry state from absorption, and reduced to the condition of a calcareous concretion; the whole according to the grade of the inflammation, the regimen, the treatment and the constitution of the patients."

"Such are the necessary and indispensable results of chronic phlegmasiæ of the lungs. It is not therefore astonishing, that so many varieties are met with in the disorganizations produced by these phlegmasiæ; but it is evident that *the granular form must always exist there*, and that it is a very gross error to attribute the primary cause of every pulmonary phthisis to granulations."

"But when instead of these various coloured granulations, we find in the lungs, those white, roundish bodies of which we have spoken, and which resemble opaque mesenteric glands; when these bodies are seen softened in some places, reduced to a pulp in others, and we discover the cavities which result, either from the expectoration or resorption of their detritus; the disorganization of the parenchyma would appear to have commenced in these same bodies, and the phthisis merits the name of tubercular. If we now seek for the circumstances which prepare and facilitate the formation of these tubercles, we will be satisfied, 1st, that they are common in cold and moist countries, and rare in warm climates, even in constitutions which are attacked with them in cold regions. This I have verified, as I have already repeatedly said, during twenty years of military practice. 2d. That they are frequent in children, rare in adults, and among the latter, those who have preserved an infantile temperament are the most exposed to them; for, during the twelve years that I have attended to civil practice in Paris, where they ought to be the most common, I have looked for them in vain in several fair complexioned, slender, delicate individuals with narrow chests, such in fact, as the patient who is the subject of the preceding case. It was in the post mortem examinations of this description of individuals, that I had occasion to notice the error which I have just acknowledged. The small, variously coloured granulations which filled the parenchyma, and are consequently found in the parietes of the cells, received the name of tubercles from

the bystanders. How often have I not repeated to them the observations which I have again had occasion to make on the case of Mrs. A.; namely, that these granulations scarcely existed in those parts of the organ, in which the phlegmasia was only commencing! how often have I not shown them that the circumference of the focus presented small abscesses, filled with a white and creamy pus, although it was not granular! On close inspection all that was to be seen were small black points intermingled with some of a red colour; but they were the first effect of the extension of the chronic phlogosis; and in examining the vicinity we might easily convince ourselves that their number would have increased, and their forms been diversified, if the patient had lived a long time."

"But when instead of these granulations, there is found large white tubercles, whose destruction produces cavities, are these bodies to be attributed to a cause different from inflammation? The remarks I have made on the situations, ages and temperaments which afford examples of this kind of disorganization, appear to me to demonstrate, that it solely depends on the disposition of the patients; that is, that the lungs being forced by the influence of cold to display an excessive activity, to secrete an exalted exhalation and absorption, the super-irritation becomes fixed in the exhaling, secreting and absorbing tissues, and is developed in a greater or less degree, according to the particular temperament of each individual."

From this passage, it is seen how far the ideas of the author at that time, as to the cause of the granulated state of inflamed lungs, were from limiting it to the development of morbid lymphatic ganglions. He saw chronic irritation acting on all the elementary and compound tissues of the lungs, and expressly pointed out the bronchial vesicles. But this passage is dated in the month of June, 1825, a period when he could have had no acquaintance with the work of M. Andral, jr. which did not appear till 1826, in the same city in which the *Annals* are published. The idea of placing the origin of tubercles in the pulmonary vesicles could not therefore have been suggested to the author by the work of M. Andral.

It will perhaps be objected that this idea was promulgated in

1825, in the work of M. Louis, and the credit given to M. Andral: agreed, but the work of M. Louis on phthisis pulmonalis, which had been presented to the Royal Academy of Medicine, was only known through the report of that society, which appeared in the *Revue Medicale*, in September; and at that time four months had elapsed since the article quoted from the *Annals*, and the substance of which had been constantly repeated in the lectures of the author, had been published.

We have entered on these minute details respecting dates, not with the mere intention of claiming the priority as regards the anatomico-pathological peculiarities, though we certainly attach importance to them, but we do not regard them as the foundation of medical doctrine, and willingly abandon them to dissectors, who have leisure enough to devote themselves to this subject; we have also the design of pointing out the trivialness of the following passage, written by M. Andral, a long time after, as we have said, repeated to our pupils, who did not fail to speak of it every where, and finally had published in the *Annals* every thing that we have just said respecting the forms and various origin of alterations of the lungs.

"If M. Broussais, guided by the analogy of what takes place in the mesenteric ganglions subsequent to an enteritis, had been content with saying that sometimes the lymphatic glands of the lungs also in inflaming, became apparent, by the tumefaction they underwent, and finally became tubercular consecutively to a bronchitis, he would have promulgated a very probable opinion; but when M. Broussais has wished to generalize this idea, when he has stated that pulmonary tubercles were always seated in the lymphatic system of the respiratory apparatus, he has published an opinion which appears to us to be in contradiction with what observation teaches us in relation to the manner in which tubercles are developed in the lungs, and above all in other organs."

It is thus that M. Andral is pleased to rail at us, without being aware that the best part of what he has said, he has derived from us. In fact, even before he had a medical idea, we had expressed our doubts as regarded the primary and sole seat of tubercles, as the following quotation will prove. He has appropriated to himself the first objections we made to the theories

of MM. Bayle and Laennec, in which we proved that their pretended primitive tubercles can only arise from inflammation of the lymphatic system; he concluded that we had generalized this idea, and that doubtless we were incapable of seeing any thing but an affection of the lymphatic vessels in all pulmonary tubercles. But it is sufficient to read what follows, to know what to believe on this point.

Examination of Medical Doctrines, first edition, p. 342.—"Whatever pains this author, (M. Bayle,) took in the investigation of degenerations of the lungs, still there are a great number which escaped him. For a long time I also endeavoured to determine in a precise manner, the different forms in which the pathological alterations of the lungs of phthisical patients might present themselves; I have found white indurations, others gray, others yellow, in larger or smaller masses, more or less analogous to what is termed scirrhous, cancerous, or tuberculous matter; calcareous or osseous concretions in the middle of these masses; in other subjects *a confused admixture of black, yellow, white, &c. points, forming so many small, confused globules*, some of which were hard, others friable; the fluid that could be pressed out of them, presented the same varieties; I have found it of every colour and every consistence, sometimes purulent, sometimes sanious, at other times creamy, reddish, watery, &c. Some lungs were traversed by *kinds of bands of cellular tissue, filled with lymphatic fluid*, and resembling the pulp of an orange, or rather the clots of blood deprived of colouring matter that are met in aneurismal hearts."

"In the midst of this confusion I was unable to clearly determine the degeneration which corresponded to the irritation of each of the orders of vessels, of which the tissue of the lungs is composed, and this distinction is very difficult. It is evident that the tubercular state is the effect of the irritation of the lymphatic capillaries; but this degeneration is not the only one, as a proof of which, it is sufficient to observe the varieties of colour and consistence, presented by lymphatic ganglions, when a great number are found altered in the same body. This is also the case with the cellular and serous tissues, although it is well-known that their *acute irritation* furnishes a pus analogous to that of a

phlegmon, and their chronic irritation fatty, lardaceous, sebaceous melliform states; so many other varieties are found, that it is impossible to indicate the precise results of their irritations. In fact, in some cases their acute inflammation produces a gelatinous or albuminous serosity; in others a sanguinolent liquid; sometimes a fibrinous layer, (the serous membranes;) at others pure blood; sometimes this fluid fills the whole of a serous membrane, whilst in another case, the same surface presents, in one region, phlegmonous pus, in another, a false membrane, and in a third, pure or decomposed blood, &c. There is the same variety in *chronic irritation* of these tissues; for, besides the indurations and concretions, of which I have just spoken, we meet with ganglions and tubercular matter, red tissues and sanguineous extravasations; this ought not to surprise us, since the lymphatic and sanguineous capillaries, and the absorbing vessels are found in these tissues, interlaced with the exhalants, and perhaps even with other vessels which are unknown to us.

"If all these disorders are possible in the cellular and adipose tissues, and in the serous membranes, whose structure is the most simple with which we are acquainted, how many different degenerations must not be presented to us by organs charged with several functions, and which, to fulfil them, require multiplied tissues, endowed with different organic properties.

"Associate the cellular and lymphatic tissues, which in fact are met with every where, with the nervous papillæ and glandular follicles, as they are in the mucous membranes; with an erectile, fibrous, dense, very sanguineous and highly sensitive tissue, as are met with in the soft palate, the cardiac, and pyloric orifices, the valve of the cœcum, the anus, the neck of the uterus and the vagina; with the secretories and excretories of particular fluids, as are necessarily presented in the liver, the pancreas, the mammary and salivary glands, the testicles, the ovaries, and the kidneys, how various will not be the forms of the disorganization!

"Afterwards examine the lungs; is there any organ more complicated? Sanguineous capillaries of different orders, nervous branches, nervous papillæ, mucous membranes, cellular, serous, and exhalant tissues, free absorbents, absorbents meandering in the ganglions, mucous follicles, perhaps vessels appropriated to

the exhalation and absorption of gaseous fluids: observe all those tissues endowed with different degrees of sensibility and irritability, differently stimulated by the blood, the air, by the exercise of the voice, and by the influence of the passions: figure to yourself all these vessels *surcharged with fluids, and forced to an extraordinary action by the diminution of that of the skin;* consider the increased action, which is sympathetically impressed on them by food and stimulating medicaments, immediately by a superabundant chyle, and *you will not be astonished to meet so great a variety, (of alterations,) after chronic irritations of this organ.*" (The author dilates at great length on these physiologico-pathological considerations, p. 347.)

How has M. Andral dared to assert, after this, that M. Broussais saw nothing but diseased glands in phthisical patients? How could he announce as a new idea, that the tubercles were the product of a morbid secretion, of a super-secretion, or a super-exhalation? These ideas were in circulation in the medical world; they have passed from mouth to mouth for a dozen years past; and M. Andral has just acquired them by inspiration.

Nevertheless, he admits with us the lymphatic origin, since he adds to what we have quoted:—"We again repeat it, the engorgement of the lymphatic ganglions of the lungs may be the origin of a certain number of pulmonary tubercles." This phrase would appear to indicate that he had seen these ganglions become tubercular; nevertheless, he adds;—But there is a "wide distance between a fact simply possible, and one which is demonstrated." What is the meaning of such language? How can it be said that a thing is possible, if its existence has not been demonstrated? The word possible supposes here, that the thing has been verified; and the question is, to know if it exists in this or that case, if it is often met with, &c. The conclusions of the theory of M. Andral on tubercles are the following:—

1st. *Pulmonary tubercles are the product of a morbid secretion.* We agree with him on this point of doctrine, which we promulgated in 1808, adding, that the morbid state which produces this secretion is an irritation; and we have always said that irritation might furnish morbid secretions. He pretends that tubercles commence by white points, which are only a sort of liquid pus, and

that the pus augments, thickens, and forms those masses which are termed *crude tubercles.* It was believed that they commenced by being hard; he maintained, on the contrary, that they are at first soft, and become hard by the absorption of the most liquid part of the pus, of which they are formed, whence results the concretion of the remainder. This observation is precious, and supports the inflammatory origin which we have assigned to tubercles; but is it applicable to all pulmonary tubercles? These granulations, so variable in consistence and in colour, which are to be seen in a lung suffering under chronic inflammation, cannot all be concrete pus; sometimes they are altered vesicles, at others they are fasciculi of lymphatic vessels. These fasciculi may, doubtless, secrete pus, which is formed in small drops, but are they not susceptible of any other species of alteration?

2d. *It does not appear right to designate them by the name of accidental tissues. (They do not, in fact, present any characters which, to the anatomist, constitute a tissue; neither vessels, canals, areolæ, fibres, or membranes are found in them; nothing in short which recals the idea of organization.)* It is necessary, we think, to establish distinctions. If we speak of granulations, which are developed by white or yellow points, at first fluid, and afterwards concrete, which the author considers analogous to suppuration, no trace of organization will be found in them; for this is nothing, as we have already said several times, but lymphatic pus, or albuminous matter dried, and sometimes combined with phosphate of lime, or other inert substances; but if it is intended to speak of the ganglions which surround the bronchiæ, and which, in some individuals affected with bronchitis, tumefy before they are transformed into tubercular matter; it must be confessed, that their organization remains for some time, as well as in the mesenteric glands when similarly affected, and does not disappear till the disease has made considerable progress.

3d. *The pathological phenomenon which precedes the tubercular secretion, is an active sanguineous congestion, similar to that which precedes every secretory action; but it is not necessarily a pneumonia in the sense which is commonly attached to this word.* A reading may be here remarked, calculated to divert the attention of readers from the word irritation. What in

fact is a pathological secretory phenomenon of the lungs, which depends on an active sanguineous congestion, without being a pneumonia, if it is not a grade of chronic phlegmasia, which, according to us, is always the product of irritation? But if it is not this, if the active congestion exists of itself, without being induced by a stimulus, which forces the organ to a supernormal action, let an example of such an entity be given to us. We have expressly said, that whenever the tissues of the lungs, which act specially on the lymphatic or serous part of the blood, are forced into an increased vital action for a long time, whether from some pulmonary phlegmasia, or by cold; in short, whenever the serous fluids are continually attracted or repelled towards the lungs, these irritated tissues become tumefied, dissolve and suppurate, each in their peculiar manner, and produce the derangements observed in tubercular phthisis. This idea has been presented under different forms; it has been amply developed in the *History of Chronic Phlegmasiæ*, and afterwards in the *Examination of Medical Doctrines*, and finally, in the commencement of these commentaries. We have applied it to all the organs. We have every where pointed out the irritation acting slowly on the different white tissues; that is, on the ganglionic, the follicular secretories, the mucous and other tissues, the serous, the cellular, the ligamentous, the fibrous, &c.; we have always shown as the result of this irritation, and from the morbid state of the secretory, exhalent, absorbent, or nutritive action of these tissues, various kinds of alterations, among which figure, not only the form termed tubercular, but also the scirrhous, the encephaloid, the lardaceous, and melanose, when it does not depend on blood extravasated in the capillary tissues, &c. &c. What, therefore, does M. Andral mean to say, when limiting himself to attributing to us the generalization of a pulmonary glandular affection, he undertakes to fill the pretended blank left by us in imagining *a morbid secretory phenomenon*, depending on *an active congestion*, and which, *nevertheless, is not a pneumonia?*

4th. *This secretion may equally take place in many of the tissues which enter into the composition of the lungs. (It does not occur in a special tissue; all the tissues which are susceptible of inflammation and suppuration, may equally secrete*

tubercular matter. This secretion, when the lungs are the seat of it, takes place in the small conduits, in the capillary canals, and even in the vesicles, which appear to be only the continuation, or in other words, the expansion of them.)

All this had been expressly stated in our works; it has been there shown for a long time past, that the same tissues, which, in the highest degree of vascular irritation, would become filled with blood, and experience the phenomenon of phlegmon, may, in less marked grades, become engorged, either with lymph of the usual appearance, or of a caseous consistence, or with fat, or any other humour which is peculiar to them, and that the degeneration, which results from this, presents a tubercular or a lardaceous appearance, or that of the pulp of an orange, sometimes of the colour of the lymph, and sometimes that of the secreted humour, when a secretory organ, as the liver, &c. is affected. We have repeated a hundred times, that all these varieties depend on the capillary tissues to which the first irritative impulse was communicated, on the degree of this impulse, on the temperament, the modifiers, &c.

It is evident that M. Andral has only reproduced all this, with some variation of language. M. Andral, sufficiently happy without always being right, when he depends on his memory, is far from meriting the same eulogies when he wishes to be original. The following idea will prove this.

"Chemistry has recently discovered that many of the materials of the secretions, and even many of the elements of the organs exist ready formed in the blood, (urea, cerebrine.) On the other hand, some facts tend to prove that pus, resorbed from an abscess, and carried into the circulatory current, may be, sometimes, absolutely deposited on the surface, or in the parenchyma of certain organs, without any preliminary inflammatory phenomenon. If then, which it is not absurd to believe, we should be able to demonstrate that the matter which constitutes the tubercle is formed in the blood which has become diseased; as in a state of health, the immediate principle of the urine is formed in it, we shall be able to understand the deposition of this matter in certain organs, in an entirely mechanical manner, without the phenomenon of an antecedent congestion. We might even

admit, that the formation of the tubercle, or other accidental productions, in one organ rather than another, is connected with a modification in the physical disposition of the vessels, which force the different elements of the blood to pass through a sort of filter, and thus cause their separation. Finally, this separation might be considered as a morbid state of the blood itself, under the influence of which the numerous materials that constitute this fluid would be more readily separated; so that in passing through the different organs, it would leave there one or more of its elements; here the colouring matter, there the fibrine, in one place the albumen, in another the salts, and if the fluid itself was diseased, new products, as pus, tubercles," &c.

Have we not a right to be astonished, that a man who shows himself so sceptical as to doubt the existence of lymphatic tubercles of the lungs, after having admitted their *possibility*, should be so infatuated as not to see the absurdity of supposing a tubercular matter formed in the diseased blood, anterior to any affection of the solids? This must certainly be called eclectism, from the *non-exclusiveness* in favour of solidism; it is thus he proves to his own satisfaction that he has not drawn any thing from the physiological doctrine, and dissipates all suspicion of *Broussaism*, a necessary precaution, not to be found differing from the multitude.

It appears to us that M. Andral would have done much better to have persevered in his pyrrhonism, and to have demanded of the chemists if they are quite sure that certain materials exist in the blood, independent of any action of the secretory organs; and whether the urea they have discovered in that fluid has not been secreted and afterwards resorbed; whether they have positively ascertained how long the urea, which is taken up by absorption, can circulate in the humours after a removal of the kidneys; whether they are quite certain that the cerebrine which is met with in the blood, has not been carried there, owing to the perpetual circulation which takes place through the nervoso-rachidian cerebral substance. It appears that here was matter for doubt, and that a series of well-grounded objections would have done M. Andral more credit than his project of raising a smile

in some old humoralist, by his idea of a phthisis pulmonalis independent of inflammation.

The work of M. Louis has taught nothing new on the origin of tubercles; this author has limited himself to copying from MM. Bayle and Laennec. It would therefore be useless to occupy ourselves with him.

Dr. Baron, physician to the Gloucester Infirmary, has published two volumes of researches on tubercular diseases, the first of which appeared in 1819, and the second in 1822. This work, which was translated by M. Boivin, in 1825, is filled with cases, the therapeutic portion of which is beneath criticism, but the pathological anatomy has been carefully attended to. The conclusions of the author are very different from those of M. Andral: he sees in tubercles only productions, originally vesicular, which he terms hydatids, but which he does not attribute to entozoariæ, and which in thickening, compress, irritate, and inflame the tissues; he moreover regards them as wholly independent of inflammation, which does not astonish us, for the perusal of his work proved to us that he had but an incomplete idea of inflammation.

According to Dr. Baron, tubercles in the lungs, in their first stage, are not recognisable by the touch, on account of the delicacy and elasticity of their tissue; but on a close examination, it will be seen that they are small, transparent, vesicular bodies, whose shining surface serves to distinguish them from the tissue which surrounds them. Those which occur on the surface of membranes, resemble in size and general character, those globular incrustations which cover the leaves and stems of the ice plant; but he adds that he has rarely had an opportunity of meeting with them in the primary state in the human subject. Therefore in a majority of the descriptions of them that he has drawn up, he represents them at a much more advanced epoch; but then the vesicles have lost their softness and delicacy, their transparency is altered, their size is increased, &c.

The author says that during the progress of the tubercular affection, changes take place in the lungs, of which the following is a summary. In the first stage of tubercles, the surrounding tissues experience little or no alteration; the lungs preserve their vivacity of colour and their soft elasticity; nothing indi-

cates that there is any impediment to the circulation of the blood or that of the air; but in proportion as the tubercles augment in size and density, and as they become more contiguous, the disorder of the functions is manifested; the blood is impeded in its progress; the respiration generally becomes more rapid and laborious, especially in cases of slight ulceration. The consequences are evident: the lungs become more compact, their colour is darker, finally that disposition occurs, which some persons have considered as indicating the disease designated by the name of hepatization. The author refuses to seek whether this state is, or to use his own expressions, whether this affection is sympathetic or not; but in this case he regards it as the effect of the tubercles.

In all this we discover nothing new. M. Dupuis had remarked in animals the vesicular origin of tubercles, as Dr. Baron has himself confessed, and all that the latter says about the compression, the embarrassment of the lungs, finally of the state termed hepatization, the result of the development and multiplication of the tubercles, is what has been repeated in the schools for a long time past.

It was from a careful history of a great number of consumptive patients, in whom the disease could always be traced to an evident cause, that in several of our works, and first in the *History of Chronic Phlegmasiæ*, we have combated this opinion of the entirely mechanical compression of the lungs, from the effect of tubercles, developed, it is not known how or why, in the pulmonary parenchyma: our conclusions have been, that nothing could prove that these tubercles would have been formed, if inflammation had not been accidentally induced; it absolutely required, in our opinion, that there should be a relation between this phenomenon and the production of the tubercles, and this relation appeared to us to be that of cause and effect. But Dr. Baron, not regarding inflammation in the same point of view as we have done, any discussion with this author would be useless. We must wait until physiological ideas are gradually adopted in his country, to preach such a doctrine to him.

The idea of MM. Dupuis and Baron, that small transparent vesicles are formed in the solid, porous, or membranous organs,

which in increasing, acquire consistence, become opaque, and filled with a fluid of different degrees of consistence and appearance, and finally constitute one of the forms of the organic alteration to which the name of tubercles has been given; this idea, we repeat, does not appear to us to be entirely destitute of probability or even of truth; but this is no reason why other tumours, which have equally received the same name, may not be formed in an entirely different manner. For example, instead of commencing in a vesicular form, the tubercles that arise in these tissues may commence by small effusions of lymphatic matter, which soon assumes a caseous appearance; why may not we admit this mode of alteration in transparent laminated tissues and in the absorbent vessels, since it has been observed in the receptaculum chyli, and in the thoracic duct, which has been found filled and obliterated by a caseiform pus, corresponding to the tubercular matter of modern pathological anatomists?

On the other hand, we entertain no doubt that the pulmonary vesicles, (which we shall continue to call bronchial vesicles,) may not become the nuclei of tubercles, by swelling, filling, cohering, and becoming closely united to each other, and that fluids of various appearance and degrees of consistence might present themselves. Independently of all this, we are convinced that the lymphatic ganglions, the secretory glandular granules, may also, without passing through the vesicular state, swell, become indurated, and be resolved into a caseiform matter, which would appear to be, as we have always said, a particular mode of chronic suppuration. Moreover, we conjecture, that in some organs where no lymphatic ganglions are perceptible, that sometimes accidental ones are generated, which after having had the form of normal ganglions, undergo, like these latter, a tubercular degeneration. Finally, we admit that regular depots of pus may take place in the cellular and areolar tissues, like that which separates the bronchial vesicles and other analogous structures, and on serous surfaces; that this pus soon thickens and acquires consistence, and forms those caseiform masses, or those having an appearance of plaster, which are found in the lungs and in the pleuræ after pneumonia and pleurisies of the most chronic character. If they are not met with in

the peritoneum, and in the arachnoid, it arises in part from the difference of vitality, perhaps also from the serosity of these membranes being more viscous than that of the pleura.

But what we find common to all these modes of degeneration, apparently so different, is irritation, which appears to us to be their common parent. Moreover, our decided opinion, and we did not wait for the publication of the above cited works to express it, our opinion is that several modes of alterations may be met with in the same tissues, and that to explain them, we must not content ourselves by a recourse to engorgement, extravasation, or to morbid purulent excretions, but must also recur to aberrations of nutrition, and to certain hypertrophic vegetations, which are equally with other kinds of disorganizing alterations developed under the influence of irritation.

Such are our fundamental ideas on the cause of disorganizing alterations; we have already expressed them in nearly similar terms in several of our works; but we have deemed it proper to reproduce and give them additional development at the present time, (December, 1826,) because they are in their appropriate place, when conjoined to the proposition treating on pulmonary tubercles.

We have just read in the *Journal General de Médecine*, for August, 1826, page 223, an article by M. Cruveilhier, by which we learn that he caused tubercles in the lungs of dogs by injecting mercury through the trachea. These animals having died some weeks after this injection in a state of consumption, the lungs were found filled with tubercles, the centre of each of which contained a globule of mercury. The substance of these tubercles appeared to M. Cruveilhier to be concrete pus; whence the author deduces that pulmonary tubercles have their seat in the bronchial vesicles; that they cannot be the effect of a catarrh; that in ordinary cases of phthisis it is probably the influence of certain foreign bodies acting on the internal surface of the bronchiæ.

These conclusions are very far from being decisive, and notwithstanding the high esteem we have for the talents of M. Cruveilhier, we will venture to make some objections to them.

The concrete, caseiform purulent matter is certainly here the product of the irritation caused by the small particles of mercury

on the internal surface of the bronchial vesicles; but it does not result from this that these vesicles cannot be irritated in the mode which produces this matter without the presence of foreign bodies. In fact, who would be hardy enough to affirm that the phlegmasia of the bronchiæ, transmitted to the vesicles, and persisting there for some time in a slight grade, will never produce the tubercular caseiform substance. Is there a practitioner who would dare to make a negative assertion of this importance; when he sees the tonsils affected with chronic phlegmasia produce this same substance; when he sees it result from a chronic inflammation of both the internal and external ganglions, whether in the viscera or in the locomotive apparatus; when he observes it, after chronic peritonitis, in the serous membrane of the abdomen; when he meets with it around gouty articulations, in the coats of arteries attacked with chronic phlegmasiæ, in the cellular tissues interposed between the muscles, in the skin disfigured by elephantiasis, in the spongy bones, and in the cavities of the labyrinth of the ear, where it replaces the nervous substance in some cases of otitis; in short, in all parts of the body where there are white tissues, provided these tissues have been irritated for a long time in a slight degree? Let it be proved to us that all these different forms of the white caseiform substance are not produced by chronic irritation; let it be demonstrated to us that it can only be formed in the lungs by foreign bodies introduced in the bronchial vesicles, and that it cannot exist except in the vesicles; let us be convinced that it required the presence of foreign bodies in the mesenteric ganglions of patients suffering under tabes mesenterica, to produce the tubercular matter there, or that this matter is engendered by a wholly different mode from that which presides over the generation of tubercles in the lungs; let us be told in what way the lungs of some consumptive patients present effusions of tubercular matter, that is caseiform, in the interstices of the bronchiæ; why there are detached masses in the pleura in some pleuritic patients, and let these facts be connected with the introduction of certain foreign bodies into the bronchial vesicles; then we will admit as many special morbid entities as shall be proved to us by irrefragable evidence.

Until then we shall believe that the puriform concrete matter, forming the tubercles of M. Cruveilhier, was only the result of the immediate stimulation exercised by the mercurial globules, and we will add that every other stimulation will produce the same effect, when it acts like it in a chronic manner, not only on the interior of the bronchiæ, but also on all the tissues formed of gelatine and albumine more or less combined with salts, &c.

If it be alleged that many persons experience pulmonary catarrhs for a long time, and even attain an advanced age, without becoming phthisical, we will reply that this vague assertion, generally admitted on hearsay, merits an investigation by practitioners cultivating pathological anatomy. We have under our eyes many of these individuals with catarrhs, who are advancing in years; we see them sink after numerous relapses, and at last they perish from the effects of a catarrh converted into a pneumonia; we find tubercles in their lungs, as in those of young persons; except that the greatest proportion of these tubercles are black or brown, instead of being white; this depends entirely on the difference of age. These aged phthisical patients, only differ from the young in their having better supported the pulmonary phlegmasia in their youth; either because they were better treated, or because they were more robust or less irritable, which is the most common; these aged phthisical individuals are to the young, what old sufferers from chronic gastro-duodeno-hepatitis, or pretended obstructions, are to young persons who fall victims to the pain of acute gastro-enteritis, so ridiculously designated by the title of adynamic fever.

But there are many individuals in society who are supposed to be affected only with catarrh, and who in fact are attacked with hypertrophy of the heart or aortitis. These persons are almost always broken-winded, they take cold with great facility, they habitually expectorate much, because the difficulty of the passage of the blood through the lungs greatly facilitates the secretion of the bronchiæ. These patients, although having suffered irritation of the lungs are much less subject to tubercles than those who are attacked with a primitive catarrh. They are less exposed to them as their lungs are more humid, more serous, and there must be but little serosity in the irritated white tissues, for

the suppuration which is formed there to be susceptible of that degree of concretion which corresponds to a tubercle; which does not prevent an aneurism of the heart or large vessels from also coïnciding with the degree of concrescence of the pulmonary lymph, which tends to the formation of tubercles.

Having injected mercury in the vessels of the limbs, M. Cruveilhier also observed in the capillary system of these parts, tubercles having a small particle of this metal in their centre; an additional proof, that here, as in the pulmonary tubercles by the same cause, they were only the effect of the immediate irritation. If M. Cruveilhier could have injected his mercury in the bronchial arteries and other vessels of the lungs, he would then have found tubercles elsewhere than in the bronchial vesicles, and would not have concluded that it probably required the presence of a foreign body in these vesicles to produce tubercular phthisis pulmonalis.

These injections of the vascular system suggested other ideas to Professor Cruveilhier.* He has remarked that mercury introduced into the blood-vessels produced more inflammation in the veins than in the arteries. There is nothing astonishing in this fact; 1st, because the small veins are more numerous than the small arteries; 2d, because the circulation in them being slower, the foreign stimulant remains a longer time in contact with their parietes than with those of the small arteries; 3d, because the tunics of veins are softer, more dilatable, more retractile, in short, more alive than those of the arteries; but should we conclude in a general manner from this that the immediate seat of inflammation is in the venous system? Certainly not; since, 1st, the tunics of arteries may also experience this phenomenon, as is demonstrated, without speaking of other facts, by the experiments of M. Cruveilhier himself; 2d, the lymphatic vessels have been found inflamed; 3d, inflammation has been observed in the excretory canals, as the urethra, the vas deferens, the ductus choledocus, &c.; 4th, the cells and areolæ of the cellular and areolar tissues inflame as readily as the thinnest serous membranes when an irritating body is injected into them. M. Cruveilhier will

* Nouvelle Bibliotheque Medicale, Oct. & Nov. 1826, page 5—153.

perhaps say that it is the veins of the lymphatics, those of the arteries, those of the excretory canals, those of the small transparent laminæ of the areolar and serous tissues, which alone experience inflammation; but how is such a proposition to be supported without having instruments capable of giving a demonstration of it? But if he does not possess them, and must recur to what our senses can perceive without their aid, how, I repeat, can such a proposition be supported in the face of numerous facts which demonstrate that arteritis is neither less possible nor less complete than phlebitis, in vessels visible to the naked eye or aided by the microscopes which we possess? There will scarcely be found one case of aneurism in ten, (I perhaps do not make a sufficient allowance,) in which a very extensive arteritis does not exist; I have often found it propagated to the smallest arteries. Has it not been recently shown that arteritis accompanies small-pox, at least in a great number of cases? It is equally found, as well as phlebitis, after scarlatina and measles, when they are fatal, as I have several times taken care to verify. And are not the nerves equally susceptible of inflammation, and may we not apply to them the same reasoning as has been just employed with regard to the vascular system.

All that can be deduced from the experiments of M. Cruveilhier is, that a focus of inflammation, presents, generally speaking, more small veins inflamed than small arteries, and that the inflammation of capillary tissues is more readily propagated in the veins than in the arteries; which does not prevent, I again repeat, arteritis from being a common disease, and one which plays a very important part in the eruptive phlegmasiæ and in all the diseases of the heart.

If it be thought necessary, what we have said in our *Physiology applied to Pathology*, Vol. 2, may be consulted, on the manner in which irritation is developed in the sanguineous vascular system.

PROP. CLXXI.

The term phthisis pulmonalis expressing only the disorganization which is the product of inflammation of the pulmonary parenchyma, ought not to be applied to this

phlegmasia. It would be better to call it chronic pneumonia, thus specifying the tissue of the organ in which the disease commenced.

From the multiplication of observations and researches on the causes and various forms of phthisis pulmonalis, we have arrived at such a point as no longer to agree as to the meaning of this term, and this manifestly has depended on not knowing how to connect the facts with really physiological principles. An individual presented himself with cough, expectoration and emaciation; he was declared phthisical, because other persons had been observed to fall victims to the same concourse of symptoms; but he recovered; it was obliged to be confessed that he had not been phthisical, or to say that a wasting of the body, with disorganization of the lungs had been cured, which without being impossible, was at least very difficult to prove. On the other hand, a patient apparently slightly affected with an irritation of the bronchiæ or pleura, requested the aid of a physician; the latter boldly encouraged him as to the dreaded termination of his disease; he declared it mild, and pronounced that his patient had nothing to fear from phthisis pulmonalis. The patient entirely neglected his disease; it was treated in an inactive manner; it increased, and he was soon told by his medical attendants, that in consequence of having permitted the favourable moment to pass, he had given time for phthisis pulmonalis to form. If there had been a unison of opinion on these expressions, it is clear that such a blunder would not have been committed.

But the following is a misunderstanding of an entirely different kind. Some physicians, struck with always meeting the granulations termed tubercular in the lungs, have not hesitated to attribute phthisis pulmonalis exclusively to these foreign bodies, and the words *to have phthisis* became synonymous with *having tubercles in the tissue of the lungs.* This opinion had made such progress among us during the early part of the present century, that some very celebrated physicians undertook to prove that as a full grown oak was the same thing as an acorn which had not yet germinated, that a thousand tubercles arrived at maturity, and excavating the pulmonary parenchyma into nu-

merous cavities filled with pus, must be identical with a thousand incipient tubercles; whence it clearly resulted, according to these same logicians, that a person having only a slight cough was affected with the same disease as another who expectorated pus, and had reached the last stage of marasmus, provided this slight cough was the effect of incipient tubercles formed in the parenchyma of the lungs. Both were equally, in the eyes of these authors, real phthises.

In granting them this conclusion, which is not correct, since in the consumptive patient who has reached the last stage there exists many diseases which are not present in an individual who is only affected with incipient tubercles, the difficulty is always to ascertain whether the cough and irritation of the chest of the individual without fever and emaciation are the effect of incipient tubercles. Notwithstanding all their skill, the physicians who adopt this opinion had no certain method of resolving this question. They had recourse to temperament, and to inheritance; if they found some examples of phthisis in the family, they affirmed that the patient's cough depended on tubercles; if they did not meet with any, and the individual was robust and had a broad chest, they pronounced that the cough could not be the effect of tubercles; if the delicate patient recovered, it was maintained that the tubercles remained stationary, and that the phthisis was only suspended; but if, notwithstanding, the cure remained permanent, they were obliged to confess that they had been mistaken, and that instead of tubercles in the lungs, there had only been inflammation. But if the robust individual perished, and the post mortem examination manifested tubercles in the lungs, the physician alleged, after having avowed his mistake, that doubtless among the ancestors or relations of the patient, there had been some examples of phthisis pulmonalis; so that the germ of tubercles might have been transmitted to this individual, and been developed by some accidental circumstances.

As to the principle of tubercles, it was considered to be of a scrofulous nature; hence the idea of attacking by solvents; for it was pretended to dissolve the lymph in the vessels as in a crucible. Thus, instead of attacking the disease by antiphlogistics,

soap and alkaline substances were prescribed to persons affected with an harassing cough independent of a catarrh. It is now easily perceived how such a treatment must have multiplied consumptive patients, and given celebrity to physicians by justifying their fatal prognosis.

It is thus that they reasoned and acted in France as regards phthisis pulmonalis. However numerous were the evils induced by such a theory, they were nothing in comparison to those attendant on the vague and worthless empiricism of some neighbouring schools. Phthisis was spoken of to you as a thing perfectly understood, consisting essentially in the destruction of the lungs, with emaciation of the body, which necessarily induced the idea of death. Afterwards in the enumeration of clinical facts, examples of inflammatory, mucous, scrofulous, catarrhal, rheumatic, nervous, herpetic, psoric, and sanguineous phthises, were cited to you, some of which had been fatal, and others completely cured; and when, imbued with the principles of the French practice of that day, you would say to yourself, "Ah! doubtless those who perished must have been victims of a tubercular disposition existing in their family," you might find yourself unexpectedly disappointed in meeting arranged with all these phthises an example of one denominated tubercular, whether cured or not is of no consequence, but so placed as to make you understand that it had not been confounded with the others.

Dismayed by the aspect of all these ill-defined entities, convinced by long observation that tubercles are not the cause but the effect of prolonged irritation of the pulmonary tissues, the author of the *Propositions* conceived the idea of banishing all these vague denominations, and to restrict himself to the pure and simple detail of facts. The lungs are never disorganized except from the effect of an irritation, and this may commence, sometimes in the mucous membrane, sometimes in the serous, and at others in the intermediate tissues. In every case, when they are disorganized, there is always irritation of the parenchyma or of this intermediate tissue; and as all the irritations of vascular fasciculi are grades of inflammation, it may be asserted, that pneumonia always exists when there is a disorganizing irritation of the pulmonary parenchyma, and that these pneumonias

cannot differ from each other except in the tissue in which the irritation predominates, and in their degree of intensity.

Thus, to sum up, the author has thought he has established the following distinctions among the pulmonary phlegmasiæ—1st, bronchitis; 2d, pleuritis; 3d, pneumonia, which all three may be, (A,) acute, (B,) chronic. The chronic pneumonias, which are more particularly under consideration at this time, may present themselves, 1st, commencing in a bronchial surface; 2d, commencing in a serous surface; 3d, commencing in the parenchyma, the intermediate tissue, either in the vesicles, or in the tissue in which they are situated, for it is not easy to make a distinction between them. The chronic pneumonias may, also, whichever may be the tissue in which they have arisen, A, have commenced in the acute form, that is, with all the characters of the most sanguineous inflammation; B, have commenced slowly, so that it was easy to predict, from the very first, that they would have a chronic character.

Such are the principal facts; all that is now wanting are the details; we should determine, as far as possible, by observation, what disorders the irritation menaces to produce, or has already produced, in the different tissues in which it is predominant. For this purpose we must draw our data from the temperament, the symptoms, the progress, and the duration of the disease, atmospheric influences, &c.; for example, we remark, if the irritation has remained for a long time confined to the surface of the bronchiæ, as in the cases where it has been kept up or renewed there several times by the impression of cold; then we have every probability for supposing that it gained the parenchyma by the route of the bronchial vesicles. We seek to ascertain whether the irritation has not at the same time affected the heart, the whole of the circulo-respiratory vascular and nervous apparatus, as in some hæmoptisic attacks; whether it has not been communicated or fomented by a gastritis, or a gastro-duodenitis, themselves kept up by excesses of different kinds, and if that of sexual intercourse has not, as is but too common, given every day a new impulse to the two predominant irritations; whether the irritation, commencing in the serous surface of either cavity, has not from the first been partaken of by the mucous

membrane or the parenchyma, or whether the pleura alone is diseased, and furnishing a considerable afflux of pus, (empyema, hydrothorax,) has not been the cause of the atrophy of one lung, and an increase of sanguineous congestion in that of the opposite side; in this case there is manifestly irritation of one side by effusion, which tends to compress it, and of the other by the superabundance of blood, which swells it to excess, and forces it to a double respiratory action.

How many causes capable of irritating the different tissues of the lungs, of inviting blood to, and fixing lymph in them, of depraving their nutrition, and giving rise to a multitude of disorders.

In cases where there is no sign of particular irritation of either of the membranous surfaces just spoken of, the medical man will perceive the difficulty of breathing without pain in the side; the desire to cough, without uneasiness in the internal surface of the bronchiæ, and without excretion of mucus from their lining membrane. He should endeavour to discover the evident or probable causes of such a state of things, and if he finds nothing in the other organs which authorizes him to attribute the symptoms to a sympathetic influence, he may decide on the primary origin of the parenchymatous irritation. But it is very easy here to fall into error; for example, the most frequent cause of this kind of dyspnœa, with cough, without irritation of the mucous membrane, which we have just indicated, is the morbid continuance of blood in the lungs, caused by a disease of the heart; and a hæmorrhagic disposition is very frequently allied, as effect, to this formidable cause. What an error would a physician commit, who should take such a state for a development of primary tubercles in the pulmonary parenchyma!

Certain cases, however, appear to favour such a suspicion; those, for example, where the whole external surface of the patient's body is scrofulous, those where he has been suddenly relieved of pustular, scabby eruptions, furnishing an abundant lymphatic discharge, more or less resembling pus. Well! even in these cases, how much prudence is needed by the physician, not to suffer himself to be swayed by a single idea, so as to lose sight of all the other forms of irritation which may result

from a humoral delitescence! The spasmodic irritations of the heart, chronic pericarditis, deep-seated, interlobular, sur-diaphragmatic pleurisies, gastritis, duodenitis, and sub-diaphragmatic peritonitis are all possible results of these kinds of metastases, and all causes of this dyspnœa, apparently solely parenchymatous, which may be attributed to primary tubercles.

In the same rank, may also be arranged, as possible, though rare causes of a similar mistake, those affections of the mediastinum, which consist in the development and engorgement of the cells of its areolar tissue: these sort of tumours which may acquire a sufficient volume to compress the two lobes of the lungs and produce an excessive dyspnœa, manifestly depend on irritation, which invites the lymphatic humours into the areolæ of the mediastinal tissue, and fixes them there in imparting to them a high degree of consistence; they may deceive when they are formed without pain and fever at the commencement, and cause a belief in the development of pulmonary tubercles, when they also occur under circumstances capable of adding weight to this conjecture.

PROP. CLXXII.

The serous membrane of the heart is often inflamed, and is termed pericarditis. It is characterized by the seat of the pain and by the depression and irregularity of the circulation, producing anguish, lipothymia and the fear of death.

Pericarditis is one of those diseases, which, although described by all modern authors, still often deceives the diagnosis of the physician, when it is complicated with pneumonia, and especially with pleurisy of the left side. This arises from its being the nature of visceral pains to be oftentimes obscure, to disguise each other, and to readily change character; they depend, in fact, on two elements, primary irritation of the diseased viscus, and consecutive irritation of the brain, and according as one or other of these varies, the perception must undergo variations. These

variations are still more likely to exist, when several viscera, or only several tissues of the same apparatus are simultaneously found in a state of phlegmasia.

In such cases, the stimulations received by the encephalon are so diversified, that the patient's perceptions as regards the different foci of inflammation can neither be positive nor constant. We say, in other words, that in poly-splanchnic phlegmasiæ, the painful sensations are so destitute of precision, and even confused, that if the physician calculates on them to make up his opinion, he runs the risk of never arriving at the diagnosis of the disease.

It is not so with inflammations of the skin, with those of other sensitive organs, and in general with all those which occupy the regions in which the cerebro-rachidian nerves predominate; pain is always clearly perceived in them, as long as the inflammation is not reflected or repeated in a predominant manner in the principal vital organs.

For this reason, we have dwelt with such emphasis, on the error of comparing visceral phlegmasiæ with those of external parts of the body; and we have already several times repeated that this was the cause, why inflammations which induced the pretended essential fevers, had been so long misunderstood.

But when pericarditis exists without complication, it may be considered as a disease the diagnosis of which is readily determined. Certain sensations are peculiar to it; and it is worthy of remark that they tend to develope terror, a passion which in turn, itself acts on the heart in a very marked manner. When the fear of lypothymia and even of death, which we observe in pericarditis, does not solely depend on the kind of pain which provokes the inflammation of the heart, it is still occasioned by the diminution of the sanguineous current which traverses the brain. There is no person who is ignorant that syncope depends on an insufficient quantity of blood reaching the brain, to permit it to continue its relations with the exterior: persons who are in immediate danger of syncope, in what is termed lypothymia, feel that their relations with all that surrounds them are on the point of disappearing, and moreover, they experience a horrible uneasiness, and believe that it cannot last without being followed by death. Now, peri-

carditis by preventing the development of the heart, and rendering the diastole incomplete, and the systole feeble, cannot fail, when it is intense, to produce the same sensations. We say nothing of the pain on touching the corresponding parietes of the chest, of the immobility of the ribs, but there is a phenomenon worthy of attention, to which perhaps a sufficient degree of importance has not been attached; this is the parchment-like sound which is readily perceived by means of the stethoscope. In exploring with this instrument, in incipient pericarditis, we experience a sensation analogous to that afforded by rubbing together two dry bodies like parchment; and this sign, when it is joined to the pain and agony, can leave no doubt of the existence of the phlegmasia. Nothing prevents our taking advantage of this mode of observation in elucidating the precise diagnosis of the disease and determining the extent of the irritation in pleuro-peripneumonia of the left side, in order to judge if the heart participates in it.

This aid is the more precious in such cases, as one of the principal symptoms of pericarditis, the difficulty of breathing with imminence of suffocation, is also common to pleurisy; and the stimulus which this imparts to the heart, forcing it to an action greater than that which it would have in simple pericarditis, renders the diagnosis of the latter more difficult.

The irregularity of the pulsations of the heart is placed among the symptoms of pericarditis, but it must be confessed that this symptom is sometimes wanting, even when the phlegmasia of the pericardium exists without complication with peripneumonia or pleurisy of the same side.

The proposition only draws the attention of the reader to pericarditis in general; it says nothing of the chronic state; this renders it requisite for us to dwell on the latter for a few moments.

Chronic pericarditis is generally the sequel of the acute form, when this has not been sufficiently intense to cause death. We have met with several examples of it, and think we could recognise two species, one with effusion, the other dry, and this has been the least frequently observed. In the first, which corresponds to the hydro-pericarditis of authors, puffiness of the face, œdema of the eyelids, and that of the thoracic parietes are joined to the

fluctuation perceived in the cardiac region, to the smallness of the pulse, which is often irregular, and to other well-known symptoms to verify the disease; but in the pericarditis without effusion, most of these indications are wanting. Nothing remains for the physician to found his diagnosis on, except the sensibility in the region of the heart, the depression and pain of the corresponding parietes, the lowness of spirits and perpetual depression of the patient, the impossibility to support locomotion without an increase of agony and a painful tumult in the region of the heart, the sound of grating or of parchment, and the irregularity of the pulse, if it exists. These kinds of pericarditis, which I have met with twice, are unaccompanied with dropsy; they are rather attended with marasmus and redness of the skin and conjunctivæ. But what makes me doubt whether this last symptom appertains to them exclusively is, that the patients were simultaneously affected with chronic gastritis.

PROP. CLXXIII.

The internal membrane of the heart becomes inflamed, constituting ordinary carditis. This phlegmasia affects, in preference, the arterial orifices, where it becomes often chronic, and produces impediments in the course of the blood, thickening, vegetations, ossifications, ulcers and subsequently hypertrophy of the heart and aneurism. Irritation or inflammation which has commenced in the locomotive apparatus, often produces this carditis, by becoming located in the interior of the heart.

The phlegmasiæ of the internal membrane of the heart have been misunderstood for a long time, although their effects have often been observed by pathological anatomists; this is owing to the idea of inflammation not having been properly developed in the minds of a majority of physicians. They did not know how to explain vegetations of the valves, and were tempted to attribute them to a *venereal virus*. As to the redness of the inter-

nal membrane, it was observed, but without any conclusion being drawn from it, except that the whole heart being injected, it was not astonishing that the internal membrane participated in this injection. It is only since the physiological doctrine has forced physicians to study inflammation in all its forms, that they have begun to conceive that this phenomenon might have something to do with the redness, the thickening, the ossifications and vegetations which the interior of the heart so often presents in individuals who are deemed aneurismatic.

We have several times remarked, that when inflammation reigned in the internal surface of the ventricles, and predominated near the arterial valves, the corresponding ventricular orifices must contract in the systole, and hence necessarily cause a want of proportion between the pulsations of the heart, which are strong, and those of the arteries, which are feeble, at least in comparison with those of the heart, when the left ventricle is the seat of this phlegmasia.

We have thought that this repeated effort of the heart to overcome a constantly recurring obstacle, must, by unceasingly inviting and retaining too much blood in the tissue of this viscus, at first cause a hypertrophy of it, afterwards, soften, dilate, and make it in a great measure lose its contractility, and finally induce death, from the impossibility of maintaining the circulation. This explanation still appears to be correct, but it must be added, that even without predominating near the arterial orifices, without producing a constriction there, which prevents the ventricles from entirely emptying themselves, inflammation of the internal membrane of the heart, must, from the mere fact of its existence, in inviting the blood to the muscular tissue, prepare and begin the derangements spoken of above.

In fact, this phlegmasia is a particular point of irritation, and is not the necessary result of the enlargement and thickening of the parietes of the heart, as we do not find it in all cases of hypertrophy and aneurism of this viscus: now, as every point of irritation tends to cause congestion around itself, that of the muscular tissue must then follow that of the membrane which lines it; and the more so, since meningo-carditis does not produce, like pericarditis, an effusion which might compress the heart and

prevent its hypertrophic development. At the same time, we do not hesitate to believe, that as this inflammatory irritation passes from the parenchyma to the pulmonary pleura, so also the irritation primarily developed in the muscular tissue of the heart may be propagated to its internal membrane and even to its external, which also establishes the possibility of pericarditis consecutive to real carditis.

We have met with an example of ulceration of the internal surface of the heart, in the Val-de-Grace. The solution of continuity was accomplished at the expense of the muscular tissue of the left ventricle, close to the aortic valves; it was of the size of a franc piece; the whole of the internal membrane of the ventricle was red, and the parietes of the organ in a state of hypertrophy. The patient died with symptoms of acute gastro-enteritis, accompanied with a pulse much larger and harder than is common to observe in this disease when a sufficient quantity of blood has been drawn. The aorta was not sufficiently examined to ascertain if the inflammation with which its base was attacked, had extended along its course and reached the arteries it gives off.

The proposition states that irritation or inflammation which has commenced by a locomotive apparatus, often produces this carditis, in fixing itself in the interior of the heart. What is very certain is, that individuals who have suffered for a long time with what is termed gout and rheumatism, often become aneurismatic in a very short time. But must the modification of the heart be solely attributed to the inflammation of its internal membrane? Is it not rather the effect of a sympathetic metastasis of the irritation on the muscular tissue of this viscus, which would then be affected on account of its analogy to the muscular tissue of the locomotive apparatus. This question does not appear to us to be yet solved. It is possible that the heart becomes irritated in both modes at once, or else sometimes in one and sometimes in another. However, this comparison is only instituted for cases where the muscles alone may be affected with rheumatism, and the fact is, that chronic phlegmasiæ of the articulations do not act less on the heart than those of the muscles. Must we also take into account the relation of structure between the liga-

ments, the tendons, and the aponeuroses which surround the articulations, and the tendons of the heart? But there are cases where the arthritic irritation only occupies the cellular tissue which surrounds the ligaments and the attachments of the tendons; and in this case, where would be the analogy of texture that would invite it to the heart, since this organ is deficient in a cellular tissue, which can be compared to that from whence the disorganizing impulse was transmitted? Is there not as much foundation for saying that the irritation of the locomotive apparatus, whether it comes from the muscles, or is derived from the articulations, might be propagated through the medium of the arterial system, in following the plexuses which surround the vessels of this order, to the heart, their common centre, in the first moment of irritation, and afterwards by becoming a phlegmasia in the tunics of the arteries themselves? Adopting this latter mode of transmission as the most probable, may not others propose to admit, that the tunics of the veins, better fitted than those of the arteries to contract inflammation, are the medium by which this phenomenon traverses the capillary tissues to the heart?

It might, in truth, be objected to these latter, that if it were so, those affected with phlebitis or varices, would rarely escape aneurism of the heart, whilst it would appear to be proved that the rheumatic are much more exposed to it than they are; but such as adopt this latter opinion will, perhaps, extricate themselves from the difficulty, by alleging that the violent nervous irritation of gout and rheumatism is more favourable to the progression of phlebitis towards the heart, than the obtuse inflammation of varices. Very well! but in their turn, others might make use of this fact to maintain, that the arteries, being more nervous than the veins, must be better fitted to fulfil the office of conductors of the nervous inflammatory irritation.

Moreover, it is clear that all these discussions, although founded on conjectures, may lead to the discovery of new facts. It is only requisite to know in what way the arterial and venous systems are affected in chronic disorders of the locomotive apparatus; to examine if post mortem examinations have demonstrated the progress of the inflammation along the parietes of the

veins or arteries; to verify whether the heart is affected by this propagation, or by a sympathetic influence; and if both modes exist, to be able to determine which is the most common.

The route of experiments is equally open; those who have the leisure might employ it in creating and keeping up artificial diseases; but they must avoid drawing hasty or too general conclusions. Above all, it is important to never forget that the facts afforded by spontaneous pathology, carefully observed in the human subject, are also experiments, and that they are best calculated to ensure a solid progress to medicine.

PROP. CLXXIV.

Irritation of any of the various tissues of the body, sufficiently intense to affect the heart, may produce inflammation of its two membranes. Phlegmasia of the internal tunic of the arteries is caused in the same manner, and cannot of itself keep up a violent fever.

The meaning of this proposition, which is much too laconic, is that the irritation caused by a focus of inflammation, spreads through the whole of the nervous system; that acting on the muscular fibres of the heart, through the medium of their nerves, it accumulates blood there to such a degree as to approach to inflammation, and which may, in fact, produce it, sometimes in the external membrane, sometimes in the internal; that the arteries may contract inflammation, either by the propagation of that which reigns in the interior of the heart, or by the propagation of that of the capillary focus primarily affected. The proposition then, places the heart in the same rank as all the other organs that receive the influence of this focus; it repeats then, in a special application, what was stated in a general way, when it was said that inflammation extended itself in two modes; by propagation, and by sympathy; and the organs which sympathize most with the focus of phlegmasia, are the first disposed to contract the inflammation; so that this latter frequently appears to pervade the organism through the medium of the sympathies.

This is the reason why the three visceral cavities, which are connected together by the closest sympathies, seldom fail of communicating their phlegmasiæ to each other. It is by the same law that all the internal organs act on the skin, and so often direct the irritation which harasses them towards the surface, and *vice versa*. In short, it is satisfactorily proved that the nervoso-sanguineous tissues, the surfaces of relation, their secretory appendages, and the sensitive expansions, reciprocally communicate their irritations to each other, either in themselves getting rid of them, constituting metastases, or in retaining them in a greater or less degree, thus only extending the phlegmasia, or occasioning a more or less considerable invasion of the economy by this formidable phenomenon.

At the same time, in advancing these truths, we must not forget to mention, that there are many cases in which the irritation leaps as it were from one organ to another, without any appearance of its route having been traced by the usual sympathies.

Our intention in recalling this mass of facts, is to obviate the surprise which some physicians might experience in hearing it said that the heart is menaced with inflammation in every case of violent fever; it is well, in fact, that we should habituate ourselves to this idea, if it were only to avoid the adoption of the pernicious habit of abandoning to nature the office of terminating fevers which are at first attended with no alarming symptoms. But we shall soon give another motive, which should equally induce them not to rely in all cases on this *alma mater*.

Finally, the proposition terminates in pointing out that arteritis is not sufficient to keep up a violent fever. This assertion immediately recals the idea thrown out by Frank, after having also been promulgated by one of the most ancient medical authors, that inflammatory fever is the effect of an arteritis. It is certainly possible that the arteries may be found inflamed in persons in whom there was a union of the symptoms of the inflammatory fever of the ancients, (causus,) but there was also something which they did not know how to discover; there was inflammation in the capillary tissues of the great viscera. If the brain or the lungs were not the principal seat of it, which was probably the case, since the authors in question have not termed

these fevers, either encephalitis or pneumonia, at least it existed in the internal membrane of the gastric passages. There is the more reason for this belief, as authors in all ages have been perfectly able to recognise the traces of these two inflammations, whilst even in our days nobody has been capable of discovering those of the digestive organs.

It is with regret that we again revert to this subject, but can we dispense doing so when attempting to assign the cause of an error which attributed to arteritis and phlebitis much more influence over the functions than they could have. Doubtless these phlegmasiæ may exist without being accompanied with a visceral phlegmasia; but then they do not occasion an acute febrile state; they are chronic, and not susceptible of terminating in the space of five or six days by sweats, as we see take place in the *angiotenic* fevers of nosologists. Such is the true sense of the last member of the phrase in the proposition under consideration.

PROP. CLXXV.

Acute suppurative inflammation of the muscular tissue of the heart is a very rare disease; but this tissue always degenerates after a certain time from inflammation of its lining and covering membranes.

What renders suppuration of the heart so rare, is doubtless the want of a cellular tissue disposed to this kind of alteration; perhaps also the constant action of the organ has some effect. It is with difficulty understood, in fact, although there are some examples to the contrary, that pus can remain, and not be expelled from an organ which contracts every moment; but what is still more difficult to understand is, that such an organ can lose its mobility so as to be deprived of all contractile faculty without the circulation being arrested; at the same time it not being possible for the degree of rigidity which is sometimes found in the parietes of this viscus to have taken place suddenly, we are sometimes forced to conclude that the circulation may

adapt itself to such a state for a certain time. The same is true of the opposite state, namely, great softening, which most frequently occurs after hypertrophies. We might be tempted to believe that the contractility of the large veins in the vicinity of the heart, might, at least for some time, supply that of this organ, and give a sufficient impulse to the mass of the blood to enable it to traverse the circulatory circle. Neither can it be doubted but that the impulse given by the capillary system is preserved in a part of this circuit.

PROP. CLXXVI.

The worst consequences of aneurisms of the heart are those which arise from the impediment to the circulation of the blood, as asthmas, hæmorrhages from the different passages, and dropsy; but gastritis is always associated with the other symptoms, and in a degree proportioned to the stimulating character of the treatment to which the patient is subjected.

This proposition recals one of the services rendered by the physiological doctrine; that of comparing a certain number of pathological cases to present them in a point of view capable of furnishing therapeutic indications. In fact, whatever may be the mode of degeneration of the heart, whether its valves or proper arteries are ossified, whether it is indurated with or without tubercles, softened, dilated, or greatly compressed, the result is always a prolonged continuance of the blood in the lungs, which produces dyspnœa and difficulty of locomotion, fundamental and characteristic symptoms of an obstacle to the circulation in the visceral centres. These diseases are now perfectly recognised in the midst of other affections of the chest, since the physiological doctrine has formed a particular genus of them, distinguished by the union of the two above-mentioned characters. Before this epoch, it was attempted to ascertain if there was an organic affection, or a simple neurosis in the lungs, or in the heart. If the disorganization was probable, the embarrassment

was where to locate it; and if the attempt was unsuccessful, it was attributed to the uncertainty of the art. What was said on the pretensions of the pathological anatomists may be read in the *Examinations of Medical Doctrines.* All this has a direct application to the diseases under consideration. It is of much less consequence to determine the precise mode of the alteration of the principal organs of the circulation, than to know that paroxysms of convulsive asthma indicated an obstacle to the course of the blood through the lungs; that this obstacle tends to produce hæmoptysis; that its first effect is to impede locomotion; and that eventually dropsies are almost always the consequence. With such data, we are first warned of the existence of the obstacle, whatever may be the other symptoms combined with those to which it gives rise. We then proceed to ascertain the cause of this obstacle; but if it is not immediately found, we at least have the principal indication well determined; that of facilitating the passage of blood through the heart and lungs, and as soon as we have fulfilled this imperious indication, we can occupy ourselves with the cause of the obstacle, and the means of destroying it, or of weakening its effects.

If gastritis were not known in its simplest form, it never would have been so in its complication with diseases of the heart. The sensation which patients experience of a transverse bar, and which appears to compress the diaphragm, was wholly attributed to aneurism; but, as we have also observed it in simple gastritis, and that this phlegmasia existed in all patients affected with aneurism of the heart, who we have always heard complain of it, we are led to believe that it rather depends on gastro-duodenal irritation, than on an obstacle to the circulation in the pulmonary parenchyma.

We cannot deny that there may be sanguineous stagnation in the liver, and in the whole of the venous system of the abdomen, when the heart has not sufficient energy to free itself from the blood which is poured into it by the vena cava; it is certain that the liver, which is gorged with it, becomes more enlarged than common, and that the portal system is surcharged with it. At the same time, we do not believe that this cause is sufficient to produce the general redness of the gastro-intestinal mucous mem-

brane; for we have observed bodies in which this general redness did not exist, although the patients perished in the agonies of suffocation. Since then we have redoubled our attention, and have obtained the following results:—1st, the suffering of the heart, even before it occasions a sensible obstacle to the pulmonary circulation, always determines irritation in the mucous membrane of the stomach, without, however, this inducing any diminution of the appetite; it is even sometimes more energetic; 2d, the dyspnœa having become considerable, the patients experience suffocation as soon as they have eaten, which obliges them to take but little food; then the gastritis is already tolerably intense; 3d, if we combat this complication, and oppose its return by an appropriate regimen, some patients are freed from it forever, and, although the progress of the obstacle to the course of the blood, and to the entrance of air into the bronchiæ, leads to the death of such individuals, the gastro-intestinal redness is but slight, or at least is not general; 4th, whenever antispasmodics, cough mixtures, expectorants and diuretics are lavishly employed, and the patients indulge their appetite, they perish with symptoms of gastro-enteritis, which are conjoined to those of the principal disease, and sometimes predominate over them; then the redness is intense and general in the gastro-intestinal mucous surface, and there is added to it other traces of phlegmasia, which leave the physiological physician in no doubt as to the existence of a phlogosis accompanying the forced congestion of the blood in the abdomen.

It should be remarked that the serous membrane does not participate either in the injection or inflammation of the mucous membrane, and that the liver is always, *cæteris paribus*, more engorged with blood than the pancreas or spleen. It must also be observed, that when during life, there have been no symptoms of colitis, the arch of the colon, although occupying the same region as the stomach, does not partake of its sanguineous engorgement. What was super-irritated during life, presents itself injected with blood after death; this is what we have most generally observed in the bodies of persons who fall victims to the consequences of organic affections of the heart.

Such are the facts which must reply to the objections of cer-

tain physicians; who not being acquainted with the physiological doctrine, maintain that, as redness constantly is found in the gastro-intestinal mucous membrane of patients carried off by aneurisms of the heart, they afford no proof of the existence of a gastro-enteritis. It is evident that those who have made such an objection, do not suspect either the possibility of a gastro-enteritis complicating aneurism and other affections of the heart, or that of the absence of the general redness in the bodies of such patients.

PROP. CLXXVII.

Ossifications of the proper arteries of the heart must be the consequences of inflammation of its internal membrane or of that of the large arteries.

We presume that there always exists some other alteration with the ossification of the coronary arteries, when the symptoms of the affection of the heart have been strongly marked, and it is erroneous, it appears to us, to attribute the angina pectoris and other symptoms of an obstacle to the course of the blood, exclusively to this ossification; this latter cannot have the privilege of producing this kind of suffering more than others, and we cannot persuade ourselves that the inflammation, for it is this which has disorganized the arteries of the heart, may not have extended to the other arteries, or at least may not have profoundly altered the muscular tissue of this viscus. It appears to us more probable, that those who have attributed angina pectoris solely to the ossification of the coronary arteries, have not observed the extent of the disorder caused by irritation in the heart and the whole vascular system. To make our idea better understood, we will take a rapid view of the group of symptoms, of which an entity termed *angina pectoris*, has been formed.

When an individual is suddenly arrested in walking by a pain in the region of the heart, which extends over the whole left side of the chest, and sometimes even to the arm, it is supposed to be only a nervous affection, but when this pain is accompa-

nied with a sense of suffocation, an impossibility of speaking or even of breathing, it is said to be angina pectoris. Observation must be, as has been observed by Hippocrates, very difficult, for physicians not to have at first perceived, that this state was only a symptom of irritation of the heart, which suddenly contracts in an unusual manner, and performs slight spasmodic motions in communicating the irritation to the corresponding respiratory and brachial nerves. Let the prize memoir of Jurine on this disease be read; in it will be found all that ontology which so long prevented a proper diagnosis of this kind of suffering, which, with Desportes, the author, has made an essential affection of the nerves of the cardiac and pulmonary plexuses. Parry of England approached nearer to the truth; we may even say that he was in the right road in attributing this group of symptoms to ossification of the coronary arteries; but he convinced nobody, because he specialized too much. He should have said every irritation of the heart might produce this affection, and have proved that all the sudden attacks of persons who have this viscus in a diseased state, are of the same nature as the pretended essentiality of which he is treating, and only differ from it in the painful sensation extending to the shoulder or arm of the same side, a sensation which varies, and which in most cases does not exist at all.

PROP. CLXXVIII.

Dilatations of the arch of the aorta are often the effect of chronic inflammation of its tissue. This degeneration may obliterate the openings of the arteries which convey the blood to the arms and head. The same inflammation also produces friability of the other arteries, and aneurisms which have been well described by Scarpa.

The idea has long been entertained, that pulsations of the heart are the cause of dilatation of the arch of the aorta; but there was no cognisance of what takes place in the parietes of this artery during this dilatation. Now, the first modification they experience,

is a true inflammation, and we do not hesitate to attribute it to the violent shock of the blood, which the heart perpetually forces against them. We might detail proofs of this assertion, but it would extend these commentaries to an unnecessary length, and we therefore refer our readers to the "*Annals of Physiological Medicine;*" they will there find in several places, observations deduced from facts which tend to prove that hypertrophy of the ventricles of the heart is the cause of these aortites, that they never manifest themselves except when the hypertrophy has lasted for some time, that they may extend from the arch of the aorta to the arteries which it gives off, and occasion a number of disorders in them of a more or less fatal character; as ossifications, friability, formation of clots which obliterate these vessels and prevent the further passage of the blood, a kind of alteration which is commonly met with, as has long since been remarked, in limbs affected with the spontaneous gangrene, also termed senile gangrene.

These observations do not disprove, as must be evident, the possibility of inflammation being primarily developed in other parts of the arterial system than the arch of the aorta. There is no doubt, but that arteritis can and must take place, sometimes in the vicinity of the heart, either by the extension of the phlegmasia of its tissue and especially of its internal membrane, or by the effect of the violence of its pulsations; sometimes in a more or less remote focus, and then the inflammation extends along the capillaries towards the arterial branches, and may even reach the large vessels; finally, at others in a branch which is contused or injured by a purely local traumatic cause, without the coïncidence of a disposition or diathesis which favours the extension of the phlegmasia to the remainder of the arterial system. It is for clinical observers to specify the cases in which each of these modes might appear certain or probable.

The proposition does not mention phlebitis, but it may, in many respects, be compared to arteritis. Like it, we see it beginning in a capillary focus of inflammation, especially in the abdominal viscera; it may also arise from the contusions of ligatures, which cause swelling or dilatation of the veins, and other

purely local causes, constituting the varices, which are now termed phlebites; finally, we may admit that the difficulty to the passage of blood through the narrow cavities of the heart may occasion a distension in the vena cava which tends to produce a really inflammatory state of it. (See Physiology applied to Pathology.)

PROP. CLXXIX.

Scrofula is an irritation of the external tissue in which the albuminous portion of the blood predominates; but as the heat is slight, and redness is not always present in this affection, it may be distinguished by a particular name. Is not that of sub-inflammation suitable?

PROP. CLXXX.

Inflammation is associated with this sub-inflammation, either as a cause or effect, and often accompanies it through its whole duration.

These two propositions ought not to be separated, for it requires but little to cause sub-inflammation to be complicated and heightened by inflammation; at the same time, it is requisite to give here an idea of the manner in which we conceive the affection called scrofulous, takes place.

In the human economy, there are a certain number of tissues, on which nature has bestowed but little irritability, which receive but few blood-vessels and nerves, and which remain unaffected by most of the emotions that we experience in the normal state. The sympathies of these appear latent, and inflammation attacks them more rarely than it does any of the others; in arranging these tissues according to the inverse order of their vitality, we find the cellular tissue, the lymphatic system, of which the ganglions constitute the most complex part, the periosteum, the ligaments, the cartilages and the bones. In a well-organized adult, these tissues rarely and with difficulty become inflamed, and they always receive

irritation from those that are more sanguineous, more nervous and more irritable than themselves. In infancy, they are more readily irritated, the lymphatic system always feels very promptly any irritation of the surfaces of relation of the parenchymatous secretories, and soon contracts an inflammation, more considerable than that of the tissues from which the irritation had been transmitted to it. Nevertheless, this disposition varies according to the constitution of the patients; those in whom it is most marked are called *scrofulous;* in them the skin and mucous openings are more irritable than in other children; the mucous and sebaceous follicles, and generally all the secreting capsules are also very irritable; and the slightest phlogosis of these tissues heats and tumefies the adjoining capsules, as well as the lymphatic vessels which communicate with them. The neighbouring cellular tissues are more or less implicated.

However, these irritations, far from advancing rapidly to suppuration, become chronic, produce lymphatic tumefactions, which are more or less voluminous, and of various shapes, and cause disorganization very slowly.

Such is the first grade of the scrofulous disposition or diathesis. Its effects, as has been seen, are confined to the soft tissues of the periphery of the body; the most striking fact it appears to us is, that these tissues are more irritable than they ought to be, and this even reaches such a degree that the action of cold on the skin, or the most trifling contusion, are sufficient to develope scrofulous sub-inflammations. Nevertheless, tissues which are more deeply situated, more dense and less vital, are not yet affected; but, in a higher grade of the diathesis in question, they soon become so; the periosteum, ligaments, cartilages, and bones, lose their density and their insensibility, and become the seat of white or lymphatic tumefactions; true sub-inflammations, having still less heat than the preceding, and in which disorganization is still more difficult.

Let us examine this new fact without any bias, and as if we had forgotten all that has been written on it by authors. What do we observe? Is it not dependent on a vicious irritability of the tissues in question? Is it not from their want of cohesion, or their

too great aptitude to soften and swell, in short, to their propensity to lose their peculiar character of insensibility and immobility, and to assume those of the other tissues, which they formerly resembled when in the fœtal state, and from which, according to general opinion, they had definitively diverged? Is not the above the idea that would be formed of these diseases, by a person versed in anatomical knowledge, and habituated to rely on what he saw, if he had never heard of strumous virus or principles, of scrofulous humours, and of all the entities which the spirit of hypothesis has invented as respects this disease? Such a person would pity the unhappy sufferers afflicted with a white swelling of the articulations, from a fall on the elbows, the wrists, or the knees, not that their blood was impure, but for not having their bones and ligaments sufficiently solid, for having them too much allied to the constitution of the soft parts. Well! this person we think would have a much juster idea of the scrofulous state than the authors of all the nosological works we possess on this disease.

But what then is rachitis? It is still, in our view of the subject, the most palpable proof we can adduce to prove the assertion we have just made. There are young patients in whom the combination of the phosphate of lime with the gelatine of the bones is not sufficiently strong, sufficiently perfect, to prevent the weight of the body, the pressure of the viscera, or the constant contraction of the muscles, from causing the separation of solidifying salt. But compare this separation with that which happens to a bone in a vigorous adult, in whom the periosteum and the medullary tissues are inflamed; will you deny, in the latter case, that the inflammation of tissues closely attached to the bones and penetrating into their parenchyma, has not introduced irritation there, and that it was not by awakening their irritability that the phosphate of lime in them was separated? Certainly you cannot deny these propositions. Well! add to this fact the cases where the two fragments of a broken bone become soft, that is, lose their phosphate of lime during the inflammation, and regain it when this action has disappeared: will it not result, that it is in losing their irritability that the gelatinous tissues, formed to be associated with the calcareous phosphate,

can unite with this salt in infancy, and that, if by accident, they should recover this irritability, it necessarily happens that this phosphate must a second time be separated from them?

With such data, the fact of osteo-malaxis is as well explained as it can be: children in whom the osseous parenchymata retain irritability for a long time, are subject to softening, that is, to the separation or resorption of the phosphate of lime in such of their bones as are most exposed to irritation. It is in consequence of this law that we see osteo-malaxis developed in them in the regions of the spinal column, and the lower extremities, which support the greatest weight, and that phlegmasia which attack their articulations, induce more or less softening and tumefaction of these parts.

It is hence evident, that the principle of scrofula is the same as that of osteo-malaxis, and that if these two modes of alteration do not always act in concert, the difference can only arise from the degree of the vicious irritability, which we have mentioned, and the direction accidentally taken by the causes capable of inducing an attack of the disease.

From the determination of the character of these diatheses, we naturally pass to their causes. The only ones that observation has hitherto enabled physicians to appreciate, are absence of light and air, the continued presence of an over-abundant moisture in the atmosphere, and finally, insufficient food as regards quantity, or too exclusively vegetable.

We may, it appears to us, reject without scruple, this third series of causes. The worst nourishment does not occasion scrofula in dry, well-ventilated situations, exposed to a strong light. It is particularly to a dull, humid, and stagnant atmosphere that the rachito-scrofulous disposition is owing; the other causes do not develope it except in persons who have received the germ of it. It is in cities, on moist hills, and in wooded and shady spots, that the first scrofulous patients occurred, but the crossing of races may have disseminated this affection, and sometimes made it appear in places, and under circumstances differing from that of its first cause. This observation is important as respects the treatment.

If we endeavour to discover the reason why the causes we

have just enumerated, retard the diminution of irritability in the most solid tissues of the human body, we believe that it would be a rash undertaking. Man has the power of observing the action of external modifiers on his organs, but it is not possible for him to explain the cause of this action; he does not know why one substance acts as a poison, nor why another neutralizes the effects of it; so also he is unable to explain why alimentary substances are so perfectly adapted to the wants of nutrition. The reason why he must not hope to arrive at this kind of knowledge is, that it depends on the intimate nature of inert matter, to its secret relations with living matter, and to its intrinsic and molecular movements, which can no longer be followed, as soon as they enter the domain of vitality. When we assume the want of vital force in scrofulous patients, we will have explained nothing, because this deficiency is itself dependant on that of the vivifying property of the air, which appertains to those secret molecular relations, of which we have just spoken; but, what is still worse, we would not have found the best curative indication. What, in fact, is a want of vivification, whose result is an augmentation of irritability? How can we suppose an inertia of the vital forces, which is so frequently exasperated by the most powerful tonics?

We must be content to found the indication on a clear, dry, and bright atmosphere, and on the known effect of this in regulating nutrition in the human species. As to the choice of alimentary and medicinal modifiers, we must be equally guided by the observation of their effects, which are, morever, in perfect unison with what we have said of the organic irritability of scrofulous persons. This is not the place to develope all the therapeutic views which are applicable to them, as we have a third section of commentaries, solely appropriated to the treatment of diseases; but we may here point out the consequences which result from the facts we have detailed.

We have considered the diathesis, or scrofulous disposition, only in the exterior of the body, and in the bones, and we have remarked, that it there consisted in an excess of irritability. Have we any reason to believe that by one of the most extraordinary contrasts that can be imagined, that this irritability should be

less in the tissues of the viscera? Is it possible that when the conjunctiva, the mucous membrane of the mouth and nose, and the skin, are so readily inflamed, that it would be otherwise in the sensitive surface of the digestive organs; that we may with impunity exercise stimulation there which could not be supported by the external surface. When the lymphatic ganglions of the periphery have so great a tendency to participate in the irritation of the adjoining parts, will the ganglions of the viscera be insensible to the irritation of the surfaces of the bronchiæ, of the alimentary canal, &c.? This inverse disposition must, nevertheless, be admitted, to approve of the treatment advised by authors in rachitis and scrofula. Is it founded on theory or experience? If it is dictated by the former, the latter should justify it, otherwise it would only be an error, consecrated by the authority of ages; if it only rests on experience, we must believe that success has constantly been an evidence in its favour; since to this day, the majority of practitioners cannot decide on abandoning it. Nevertheless, such is our medical and scientific position, that this treatment, the most exclusively stimulant that we find recorded in the history of the healing art, appears to us to be neither dictated by theory, nor sanctioned by experience. We have given an explanation of our ideas in other places, and we shall necessarily recur to the subject in commenting on the propositions relating to therapeutics.

PROP. CLXXXI.

Sub-inflammation of the lymphatic tissues is not developed previous to inflammation, except in the bones and the soft parts immediately covering them, in which it is produced by the action of cold upon the skin, like rheumatism, or by accidental irritations. As to the viscera, they are never affected with sub-inflammation, except consecutively to their inflammation. The same may be said of syphilitic sub-inflammations.

This proposition is sufficiently clear and detailed for every one to comprehend it perfectly, and to appreciate its applications. Observation teaches with certainty, that the subcutaneous lymphatic ganglions may become tumefied without any previous inflammation of the skin, although they often become altered after catarrhal irritations of openings of the mucous membranes. But, in cases where every inflammatory cause is wanting, the irritation of surfaces of relation has not the less presided over the morbid development of the ganglions; the impression of cold upon the skin communicates irritation to them, as it communicates it in other cases to the cellular tissues surrounding the aponeuroses and ligaments, to these ligaments themselves, as well as to the synovial capsules, and finally to all the white and gelatinous tissues of the locomotive apparatus, whence results the diseases termed gout and rheumatism. The large nerves which traverse these parts, are not themselves exempt from the influence of cold; it is not therefore astonishing, that in young persons, endowed with the predisposition already spoken of, that the lymphatic ganglions should likewise contract irritation.

It will perhaps be asked why the lymphatic system is not as easily affected in adults, whose skin receives the impression of cold, and why, under the same influence, children do not also become as often gouty or rheumatic, as scrofulous.

We might, in truth, dispense with replying to such a question, without the observation of the fact losing any part of its interest. The following is a proof of it. Although it may not always be possible to determine why the impression of cold, in the most common cases, produces in one a pleurisy, in another a peritonitis, in a third an arachnitis, in a fourth, a fifth, and a sixth inflammation of the mucous membranes of the parenchymata, it is not less certain that these different phlegmasiæ are occasioned by cold, and that at their commencement they may all be treated by the same methods. The predisposition can always be determined, and it is a great point gained. That in the disease which is the subject of this proposition, we are able to recognise the vicious irritability of the tissues, which are in general but little sensible to stimulations, which in most cases derange our functions. All children are endowed with this dispo-

sition, it only varies in degree in different individuals. Why then should we be astonished that cold should act more powerfully on their lymphatic apparatus than on that of well-organized adults?

But we cannot go into further details, to satisfy those who may pester us with such questions. We tell them, without hesitation that if cold does not readily produce scrofulous irritation in the lymphatic ganglions of adults, which, however, it sometimes does, in return it occasions and even completely developes it in the white tissues of their locomotive apparatus. Nothing bears a stronger resemblance to the scrofula of children than the lymphatic gouty tumours and rheumatic swellings in the limbs of some adults; the relations between them are so great, that we are often tempted to attribute these alterations to the vice termed strumous, although the patients may have never experienced any attack of it in their infancy. In many cases also, the irritation of adults, called rheumatic or gouty, extends to the adjoining ganglions, and the scrofulous appearance becomes still more striking. Finally, to complete this similarity, the youngest children, those who appear the most truly scrofulous, are far from being protected from rheumatism or gout. All that can be said, is that they are more exposed to irritation of the lymphatics than to that of the other white tissues, and that, *vice versa*, vigorous adults subjected to the causes mentioned in the proposition, cold and contusions, rather receive the irritation in these same tissues than in the lymphatic apparatus, although they may equally receive and keep it there for a long time.

If it is wished to view the facts in a general way, it will be clearly seen, that according to the youth and delicacy of individuals, is their liability to the irritations called scrofulous; that in some this disposition of the white tissues becomes weaker with age; that there are others in whom it lasts throughout their lives, especially if they continue exposed to the external causes which have rendered their nutrition imperfect during childhood; finally, that there is no temperament in which these causes, when they are intense and continued, cannot develope irritations of the white tissues.

What we say of the external tissues is perfectly applicable to

those of the viscera; the more adults are endowed with that delicacy of constitution, which arises in the first place from a vice of nutrition, the more irritable are they, and the more readily does the irritation developed in the other visceral tissues, especially in the internal surfaces of relation, find a facility in extending to the lymphatic, cellular and all the other white tissues of the splanchnic apparatuses; hence, the relation pointed out so long since, between scrofulous and consumptive patients, and the facility with which both contract gastro-enteritis which communicate the irritation to the mesenteric ganglions; hence, finally, the undenied aptitude of individuals who are born delicate and irritable, to scirrhous tumours of all kinds, either on the exterior of the body, or in the interior and in the parenchymata, the cellular tissue, and even the parietes of the hollow viscera which fill the abdominal cavity.

But is what is stated in the proposition on the mode of the morbid development of the lymphatics of the viscera, really true? Must there always be an irritation of other tissues for that of the ganglions and absorbents to manifest itself? We have hitherto thought so, whatever may be said or affirmed in opposition to this opinion; we have never observed that the lymphatic ganglions of the mesentery were affected before the mucous membrane. We might say as much as respects the ganglions which surround the ramifications of the bronchiæ. As regards tubercles arising out of those ganglions we can only refer to what we have said on that subject. We are far from denying the possibility of a propagation of the irritation by a similarity of tissues, although we are unacquainted with the intermedium; but it is so difficult to isolate morbid lymphatic developments of the viscera from the irritation which the other tissues of these same viscera receive from external modifiers, that we have not yet been able to conceive of primary lymphatic irritations.

The proposition connects syphilitic irritation with scrofulous, at least as regards its propagation to the visceral apparatuses. Syphilis is an additional proof of what we have advanced in the preceding proposition; the irritation begins in mucous surfaces and afterwards extends itself to the white and lymphatic tissues of the locomotive apparatus, and finally produces alterations

which resemble those of scrofula and rheumatism. We have distinctly observed that the scrofulous form is most frequent in lymphatic venereal patients, especially in those who in infancy have been tormented by returns of strumous affections; that the rheumatic, (I comprise in it, the pains in the bones, periostosis and exostosis,) appear rather in well-organized persons, but who have suffered from cold; finally, that persons endowed with a delicate skin and in whom the openings of the mucous membranes are very irritable, are in their turn more exposed to chronic phlegmasia of these membranes than to that of other tissues. We think it unnecessary to dwell long on the existence and non-existence of a virus affecting the economy. We have elsewhere said that this name might be given to the product of syphilitic phlegmasia, when it consisted in an acrid pus, more or less liable to irritate the surfaces with which it came in contact, especially, when these surfaces were already much irritated by pressure and frictions; but nothing proves that such a virus can be preserved, reproduced in the economy, and develope phlegmasiæ or sub-inflammations in the viscera. To all appearance this virus acts on the mucous membrane of the genitals as an injection of chlorine would do, or if it be wished, sanies arising from putrefaction; that is, that its effects are confined to the part which it comes in contact with, and what is propagated from one tissue of the organism to another, under the name of general infection, is nothing more than irritation.

There are two modes of proving this: the first is to provoke artificial phlegmasiæ in the genital organs, and to prove that they extend, in following the route of the syphilitic, and even be transmitted to healthy persons; the second, to demonstrate that persons who are syphilitic may communicate to others phenomena really syphilitic and susceptible of propagation to a third. It is on physicians who have charge of venereal wards in hospitals, that these kind of researches naturally devolve. We do not wish to anticipate their future labours; but we think that till they shall have proved the propagation and communication of a purely artificial syphiliform phlegmasia, a thousand objections will be found to oppose these doctrines. What does it prove in fact that syphilis is cured without mercury? Can it not be said

that the virus has more than one neutralizer, and even that antiphlogistics, diet, and water suffice to give nature the means to expel it? How many poisons enter our vessels and are eliminated without any aid? Non-contagion, in spite of the most imprudent connexions will not be more favourable to them; it might be replied that all the different poisons absorbed do not affect the vitality of the solids.

The second of the two means of proof which we have just advised, (to prove that healthy persons can communicate syphilis,) may even also be invalidated by cavilling adversaries, who might allege that nothing can prove that a person who appears healthy, does not carry in his humours a virus, which, too feeble to act on himself, nevertheless enjoys sufficient energy to affect any one who receives it through the medium of immediate communication. The enemies of the doctrine of the existence of a virus, may in vain reply that this objection is ridiculous, as such a kind of contagion must be possible by all varieties of communication, and not merely confined to sexual connexion, or such as are equally immediate and prolonged, with a violent friction of the openings of mucous membranes; the question will remain as fully undecided to persons who are difficult to be convinced, and who adhere strongly to their prejudices, to the opinions of ancient writers, or who require *direct experiments* in support of every doctrine that is proposed to them.

The non-propagation of syphilis to the interior of the body, would be an argument much in favour of the enemies of the doctrine of virus, if it were possible for them to adduce it in evidence from facts; but it may be objected, that in a majority of cases, the vital force of the viscera suffices to neutralize the influence of the virus, and in some others it is not able to resist the poison, and the cases of numbers of patients might be cited whose viscera were affected, notwithstanding the most specific treatment; and to these might be added the cures of supposed pectoral and even abdominal consumptions, by mercury.

The innovators may in vain reply, that in the first case, the affection of the viscera arises from the medicaments rather than from the disease; and as to the second, the cure may be readily explained by a revulsive contra-irritation; still there would re-

main doubts with the over-scrupulous *virusaniacs* and the ontologists, amateurs and adherents of all the incomprehensible entities would be far from being satisfied.

For all these reasons, and for many others, from which happily we may spare our readers, we advise physiological physicians to make experiments of the kind just pointed out, upon animals, that they may be enabled to elucidate cases of the same nature which may present themselves in the human species.*

PROP. CLXXXII.

The skin is susceptible of chronic irritation which is especially determined on the excretory apparatus of this tissue, and on its absorbent vessels, which induces a morbid state of this envelope by engorging it with degenerated albumen. Is not this, a kind of sub-inflammation with which inflammation may be associated in different degrees? When the irritation is communicated from the sub-inflamed skin to the viscera, it does not penetrate to their lymphatic ganglions without a previous inflammation of their mucous membranes.

Herpes and elephantiasis are designated in this proposition, diseases in which the cutaneous tissue contains more albumen than it would, for example, in a person affected with erysipelas; but in almost all cases the alteration is not limited to the proper tissue of the skin; the subcutaneous cellular tissue participates in it, and is filled with morbid fat of a lardaceous appearance; which, however, does not prevent our sometimes finding in it gelatino-albuminous tissues or collections. Now the physiological doctrine reserves the term sub-inflammation for all irritations which produce an accumulation of secondary matters arising from the different secretions, exhalations, or articles ab-

* It will doubtless be replied that these experiments are difficult, because the skin of quadrupeds, the most allied to man, is infinitely different from his. Well! let the enemies of the doctrine of virus learn to avail themselves of this objection.

sorbed, which have been altered by the phenomena of irritation. In fact if we accord particular actions to the tissues which form and excrete the secondary humours, we may admit an aberration of these actions, and whenever the physiological physician can satisfy himself that this aberration is the effect of an irritative modification, he is justified in placing it below inflammation, and in giving it a name which recals the idea of that phenomenon.

There is nothing more common in practical medicine than to see these secretory, excretory, and absorbent irritations, we do not say to succeed to inflammation in the same organ, but to alternate with it in different organs, that is to say, to replace it, and to yield again as soon as it reäppears, and that in tissues often very remote one from the other. The same reciprocity may be observed between these two modes of irritation, (phlegmasia and sub-irritation,) and hæmorrhages, as well as the neuroses; so that, in many cases the phenomena of the exaltation of vital action, arising from any stimulation whatever, may successively show itself under the appearance of inflammation possessed with these four characters, under that of hæmorrhage, under that of increased secretion, exhalation, or absorption, and finally under that of exaltation of sensibility or muscular action.

Just as inflammatory irritation deteriorates the humours and the tissues of the part which it occupies, so that of the secondary vessels tends to denaturalize the nutrition of the tissues, in the same way, and finally, that of the nerves sooner or later produces an inevitable disorganization of the neurilema or medullary substance. Much variety is observed in all this, both in the time and the precise mode of alteration; as suppuration, red or white, albuminous or lardaceous induration, more fluid, thicker or entirely concrete products, altered in appearance, in odour, and in taste, &c. all which has nothing to do with the main point. So long as the tissue which secretes these various products is not disorganized by the morbid nutrition which exists in it, the irritation may abandon the tissue, and permit it to freely perform its functions, whilst it is transferred to another; but a period will occur at which this metastasis can no longer take place; this is when disorganization has commenced. Temporary displacements of the irritation are, however, then seen, but it soon returns to its first seat, because

it is always recalled by the organic derangement. It also often happens, that a new point of irritation, which disorganizes another tissue, causes a forgetfulness for some time, of the old disorganization; but the attentive physician always finds symptoms of the latter, and soon satisfies himself that it is only an extension, and not a real revulsion of the first disease.

But let us recur to cutaneous sub-inflammations, from which this discussion, tending to prove the identity existing between the different forms of irritation, has for an instant drawn us. Herpes, the different chronic pustular affections, and the various forms of elephantiasis, have their seat manifestly in the secretory, exhalent, or absorbent tissues of the skin, and of the subcutaneous tissues. These are irritations, since we see them arise under the influence of irritants; and experience proves that they may alternate with inflammations and neurosis. We shall consider them as sub-inflammations, because we see in them a deterioration of the products of secretion, exhalation, or absorption; products which present themselves under the form of exudation of various degrees of consistency, of crusts, of scales of divers concretions, and of lardaceous tissue, which we do not observe in purely inflammatory irritations of the cutaneous surface, and of the cellular tissue. They have besides, much analogy with the irritations of the ganglionic absorbent system: the former give rise to the latter after some time, and the practitioner who has studied them, is ultimately convinced that they are, generally speaking, obstinate, and connected with glandular affections, exactly in proportion to the degree of tendency to scrofula in the patient. As to ourselves, who have had occasion to observe them closely in different ranks of life, we hold it as certain, that constitutions entirely free from this bad diathesis, may, for a long time, support cutaneous irritation, without being transformed into sub-inflammation, whilst the slightest causes produce a reäppearance of the latter in persons predisposed to ganglionary sub-inflammations, and even in general, in nearly all light-complexioned, light-haired, and delicate persons, whom we have considered as having more irritability and less cohesion in the inert white tissues than more vigorously-constituted persons have.

PROP. CLXXXIII.

Lymphatic ganglions do not become tumefied, hardened, or softened, except by an exaltation of their irritability and contractility, that is to say, by their irritation, which is one of the sub-inflammations.

It is sufficient to apply the hand to a mass of engorged glands in the neck of a scrofulous person, to clear up all doubts on this point: we find these glands so much warmer than the surrounding parts, that we are forced to acknowledge that there is an exaltation of organic action. When we afterwards observe a number of these subjects, we shall see that the influence upon the heart is in direct proportion to the size and number of the foci of ganglionic sub-inflammation; a small number produces no effect; but whenever the tumefied ganglions are very numerous, frequency of the pulse and febrile heat are never wanting. Now we ask, whether this is not what we observe also in furuncles, anthrax, erysipelas, phlegmons, in short, in all visible phlegmasia? Do not these points of irritation exercise an influence over the pulsations of the heart, proportioned to their extent?

We have applied this law to visceral phlegmasiæ; but this subject is inexhaustible, and we shall have occasion to recur to it.

There is then in the tumefied ganglions a very evident inflammatory action, but it differs from those we have just alluded to in this, that it does not rapidly tend either to suppuration or gangrene; it tumefies, slowly vitiates the ganglions it attacks; but whilst it acts thus on the exterior of the body, the sympathetic influences which it exercises over the viscera prepare in them an irritation which will ultimately burst forth with a much greater violence than that which produced it; and when it shall have arrived at its greatest intensity, it will be over with the patient; no human power can preserve him from his fate. If the external focus is destroyed by even complete ablation of the sub-inflamed ganglions, the visceral focus will only become more active, and death will occur only the more certainly and more promptly.

Such are the facts as respects the ganglions of the periphery. As to those of the viscera, it is conceivable, that having received the impulsion of the irritation of the surfaces of relation, which latter certainly become first super-irritated, they will have no greater tendency to lose it than the former. Let us go further; they will preserve it even after the phlegmasia of the membranous surfaces which has produced disease in them has completely ceased; and sooner or later they will reflect back to these membranous surfaces the inflammatory impulsion which they had received from them. Hence the high importance of the conscientious physician preserving no doubt respecting the true character of glandular tumefactions, and generally of all those of the white tissues, for they resemble one another in many respects. In fact it is upon the doctrine of the physician that the fate of the patient depends. If he believes in sub-inflammatory irritation, he will endeavour from its commencement to cure it; if he has in his mind only thickening of the lymph or debility, he will employ stimulation. Will it be revulsive or aggravate? We will treat of this question in its proper place, that is, under the head of therapeutics.

PROP. CLXXXIV.

Tumefactions of an analogous appearance to that of sub-inflamed ganglions, but occurring in tissues in which, in a healthy state, lymphatic ganglions are not perceptible, ought to be considered as of the same nature as the lymphatic ganglions developed by irritation. All these are called tubercles.

Whether tubercles be considered as inappreciable lymphatic ganglions in the normal state, and become sensible by the influence of inflammation; or as lymphatic fasciculi of an organization different from that of the ganglions, but tumefied and developed by irritation under the vascular form, which may take place in all the tissues of the body, the principal axiom of this proposition will be always applicable to them. It would not be

to tubercles, which would be only concrete pus, or small masses of what are called tubercular matter, if in fact these masses were any thing else than collections of pus, at the formation of which the mould which gives them their spherical form would have been wanting. But if it be admitted that the tubercular matter is secreted by a small vesicle, and that all tubercles are developed in the same manner as the larger encysted tumours which we find in the cellular tissue, and in certain viscera, as the liver, the brain, &c. the proposition here is equally applicable. We will go further: it is applicable to those masses of tubercular matter of irregular form, which are met with in the pulmonary parenchyma and on the free surface of the pleura; in short, whenever a morbid secretion will be admitted as the cause of tubercles, the secretion can only be ranged among the irritations, and these kind of irritations are necessarily referred to our sub-inflammations.

Thus, as we have expressed above, all the experiments of the anatomico-pathologists and dissectors of living animals, must support the physiological doctrine, which has first taught us to follow irritation to its first origin, and has shown it there producing a morbid action which developes the diseased tissue, renders it predominant over all the others, and disorganizes it by creating a series of sympathetic phenomena, more or less marked and of an appearance sometimes special, at others more or less common to the different points of irritation.

PROP. CLXXXV.

Whilst fasciculi of absorbent vessels in a state of chronic irritation degenerate into tubercles, some lymphatic vessels may become dilated by a passive engorgement produced by some compression which obstructs the course of the lymph. This state is to the absorbents what varices are to the veins.

This is an observed fact, respecting the existence of which, no conjecture can be hazarded. The only question is to verify

whether these large absorbing vessels filled with lymph, which are found in the skin of certain persons affected with elephantiasis, bear traces of inflammation, or whether they are not simply dilated. It may be added, that the inflammation which may be found there would always be the effect of a forced dilatation of the vessels, and that consequently this would be an active disease produced by a passive dilatation. These cases are not rare, because every organ distended beyond its accustomed degree contracts an irritation, and as a consequence, phlegmasia or sub-inflammation. Irritation is here mechanically produced by a species of traumatic cause.

PROP. CLXXXVI.

The cellular tissues are, next to the mucous membranes, the most susceptible of acute inflammation; when inflamed they suppurate, and this may take place without the previous inflammation having been recognisable from external symptoms.

Cold abscesses, also called abscesses by congestion when the pus manifests itself beneath the skin in a part remote from that in which it has been formed, are referred to in this proposition. The author unites these suppurations with latent phlegmasiæ of the weakest degree, and compares them with sub-inflammations. Heat and tumefaction are certainly met with there; the existence of redness cannot be demonstrated, and the pain in them is of that kind which rather resembles what are called rheumatic and nervous pains, than those of phlegmon.

What is most interesting to the physiological physician in these latent phlegmasiæ, is the predisposition: it appears to consist in an irritability of the cellular tissue, and even sometimes of the medullary tissue of the spongy bones, which approaches a little to strumous irritability. In fact, these kinds of depots occur most frequently in temperaments which have been considered in infancy as scrofulous, and in persons who have been weakened by chronic diseases. But it is to be remarked in relation to this last

fact, that most chronic diseases are inflammations or sub-inflammations, and it will therefore excite no surprise that the irritability which disposes to suppuration gradually extends and affects the least irritable tissues of the system. It is most frequently after long-continued pains, which were supposed to be purely rheumatic, and were so in fact, that these suppurations appear. This kind of irritation, which induces, as we have seen, lymphatic engorgements without suppuration and of a scrofulous appearance, would then also occasion true occult suppurations, which will establish an additional link between occult engorgement and suppuration, and connect them both with sub-inflammation.

We have seen this suppurative diathesis extremely deeply-rooted in the system, and we have also remarked that it often appeared to depend on falls and great concussions of the body. In this case, as in the preceding, the antiphlogistic treatment has always appeared to us to be the most efficacious, which tends to prove that the excess of irritability plays the principal part in it.

PROP. CLXXXVII.

The occult foci of phlegmonous suppuration with absorption of pus, cannot keep up the fever called hectic, except by the irritation communicated to the principal viscera, either by sympathy with the focus still inflamed, or by the stimulant impression of the absorbed pus. This fever is then no more essential or idiopathic than the others.

Certainly it is not, and the proofs of it have long since been detailed in the *History of Chronic Phlegmasiæ*. In this proposition, foci of cold abscesses, or those from congestion, are not alone alluded to; it likewise includes all phlegmonous foci, whatever may have been the activity of their progress, which form fistulas and sinuses in the interstices of the organs, whether

internal or external, on account of the impossibility, or at least the extreme difficulty of getting at them, and of subjecting them to surgical treatment. All these suppurations maintain a slight fever, with exacerbations at particular hours, and which assumes a remittent character. These fevers, which were formerly termed hectic, were justly attributed to the local affection; but no account was taken of the manner in which this latter could produce them. It appeared that they depended entirely on a mixture of pus with the humours, a mixture which would produce a kind of fermentation, of which sweating would be only the depuration and the crisis. The physiological doctrine has not feared to approach this question, which many regard as incapable of solution; and post mortem examinations have proved, that when it did not directly depend on a suppurating focus in the cellular tissue, the fever under consideration was maintained by chronic phlegmasia of the principal viscera. We are even now enabled to distinguish, among the group of symptoms presented by these kinds of fevers, those which arise from the suppurating focus, and those which are produced by the irritation of the different viscera. It has been ascertained that the pus acts only as a stimulant of these organs, and every stimulation of the same degree, although unattended with suppuration, may equally keep up these febrile affections. Thus is solved the problem of these diseases which caused so much embarrassment to ancient writers, and which modern ones dare not attempt to solve, not being able any more to employ the explanations of the humours; they had sometimes recourse to debility, but this explanation could not satisfy intelligent minds. What is it in fact but debility which excites the frequency of the pulse, the general heat of the body, and which constantly increases instead of ceasing by the employment of *tonics*. This debility, entirely similar to that of the supposed adynamic fever, should disappear with it to give place to therapeutic views more rational, and especially more fortunate in their results; and this view cannot be obtained except by a truly physiological study of irritability and irritation.

We do not pretend, however, that the absorption of a large quantity of unhealthy pus cannot produce some particular symptoms, remarkable among those which hectic fevers present. We

have said and repeated in these commentaries, that irritating particles, essentially inassimilable, offend the vitality of the principal viscera, and excite a series of reäctions tending to their elimination. Poisoning by the injection of putrid sanies into the vessels, or its insertion into the flesh, afford a striking example of it. We may then be tempted to attribute the sweats of phthisical patients to the suppuration of the parenchyma, and to the necessity of evacuating the pus which has been absorbed from the pulmonary foci. We avow, however, that this explanation would not be assented to by all observers: without noticing common intermittents, many prolonged remittent fevers present a great analogy with hectic, and may offer examples of these sweats terminating the febrile exacerbation, without any focus of suppuration; and on the other hand, some patients, who have manifestly similar deposits, never have febrile paroxysms terminated by perspiration. It is necessary, in order for this evacuation to be profuse, that there should be an alternate afflux of blood and congestion in the viscera of the thorax and epigastric region, and afterwards a reäction, which propels the blood into the vessels of the skin. During the first action, the irritation of the viscera produces constriction of the heart; in the second the spasm ceases, and the heart having acquired a great freedom of action, propels far from the viscera the blood with which they had been engorged; or rather the blood circulates so regularly, that there is no congestion in any part. Such are the evident facts; there are doubtless others which may furnish us the explanation of these; but it would be rash at present, perhaps, to detail them, and especially to give them as incontestible truths.

Is it necessary, however, to affirm that the propulsive motion of the heart is more energetic, the opening of the cutaneous pores easier, in a word, that the sweat is necessarily more abundant, when putrid humours, the elimination of which is indispensable, exist in a person who has just experienced a concentration like that which we have just described? There is another interesting question, the discussion of which we are permitted to enter upon. The reader will determine whether we shall resolve it.

We have said, that in order that perspiration should occur at the

termination of the febrile action, it was necessary that congestion should previously take place in the chest and epigastric region; and we have not said it undesignedly. Every congestion in which the lungs has not participated, and even largely participated, cannot be followed by a true sweating, and the more that organ participates in the congestion, the more profuse will be the perspiration. The most profuse perspiration also occurs in phlegmasiæ of the lungs. Pus, putrid sanies, or any other foreign substance which distresses the system, would then enter into the circulation without any bad effect; if the lungs did not participate in the visceral irritation, which these substances may produce, they would be eliminated quietly, without any impetuous or perspiratory reäction.

But should the lungs themselves be considered as the principal agent in these species of congestions? We would be very cautious in answering this question affirmatively. The lungs are here neither the principal agent in the concentration of the blood in the internal organs, even when it takes place in its own tissue, nor that of the reäction which succeeds to it with opening of the external pores. The heart performs this important part. It is necessary that the irritation, whatever it may be, in causing a suffering of the viscera, that is, in inducing a sensation of uneasiness in them, should impede the freedom of the diastole and systole of the heart, in order that the blood should accumulate in the central viscera.

It will perhaps be demanded where we have derived the proofs of this assertion; we answer, from nature, from the observation of pathological facts, and from comparing the simple affections of the heart, with those which are complicated. But as the facts to which we are indebted for this idea, are more closely connected with intermittent than with continued irritations, we will postpone the consideration of the subject of congestion, until we come to treat of the intermittence of irritation. We do this the more willingly, as we are desirous of concluding what it remains for us to say respecting the different species of sub-inflammations.

PROP. CLXXXVIII.

When the cellular tissues are slowly engorged with lymph or fat, in becoming indurated, without exhibiting the phenomena of inflammation, or after inflammation is extinct in them, this state is always owing to an exaltation of their irritability and of their contractility, and never to a contrary state. This is also a species of sub-inflammation.

This proposition expresses in a few words the fact, discussed in Prop. CLXXXVI, in considering the suppuration of cold abscesses as the result of an irritation intimately connected with scrofulous engorgements and which also merits being ranged in the series of sub-inflammations. Those designated in the present proposition belong to the same species; those indurations of the cellular tissues are alluded to, which are sometimes lardaceous, and sometimes filled with thick lymph, which give it the appearance of the pulp of an orange, and at others as if transformed into a mass of fatty or sebaceous matter. These kinds of alterations may occur in the subcutaneous tissue, from the effect of contusions, lepra, and some herpetic eruptions; in the cellular tissue between the laminæ of the omentum or mesentery, as the sequel of chronic peritonitis; in the tissue of the mediastinum, after the cessation of phlegmasia in that region; in the scrotum, in the spongy bones, finally, in all places where the cellular lamellæ and gelatinous areolæ will permit of a considerable development, whether or not they secrete fat or medullary animal oil.

These affections were, and still are ranged by the ontologists, out of the series of diseases of irritation, and attributed to an occult or at least entirely inexplicable modification of the economy. Most physicians view them as only a vicious modification of the nutritive function. There are but a few of these who have still the boldness to attribute the diseases under consideration to scrofulous disposition, which they refer to debility; no one that we know of, refers them to a morbid coagulation or thickening of the lymph; but there are many who vaguely ascribe

them to a morbid cause, an indefinite entity, the fugitive characters of which they derive from the previous diseases of the patient, or from the derangement of their functions, the nature of which they durst not attempt to investigate. It is thus that some of them content themselves with saying that the disease is rheumatic or gouty, and refuse at the same time to give a physiological idea of the diseases the names of which they borrow. Others consider the engorgements under consideration, as repelled itch or herpes, or as the result of the suppression of an habitual sanguineous discharge; some of them believe their complaints to arise from a scorbutic taint; others again attribute them to an intermittent fever, refusing to explain, for fear of falling into humoralism, how such a cause can produce them; finally, most of these physicians ascribe them to an occult disposition of the system, and to a kind of morbid state which prepares what is called cancer.

It must be acknowledged that none of these attempted explanations furnish any ideas respecting the physiological nature of these affections, and that above all they have the striking defect of not furnishing satisfactory curative indications. What good, in fact, results from referring the disease to the transformation of an indefinite morbid entity, or of considering this entity as concealed or included in the new disease, if a precise idea of this latter is not given? Is it to insinuate the necessity of the means which may be appropriate to the original disease? Well, how many reasons are there not, why these means should not be resorted to, that is, why remedies should not be addressed to organs which were primitively affected, but which are so no longer? Must patients who are no longer affected with herpes, itch, intermittent fever, rheumatism, &c. be treated for these affections, and can this be always done with impunity? Is it for the purpose of stimulating the organs formerly diseased, and to recal to them a morbid state similar to the former one? This indication can, in a few cases, and only at the very commencement of the secondary affection, be productive of any beneficial results; but in most cases it occasions the loss of valuable time, which might be better employed in combating the disease in the new seat which it occupies.

Physiological physicians have derived great advantage from this latter method, not only in this case, but also in a host of others, and they owe the success which they obtain to the idea that the disease which succeeds or replaces another is dependant on a phenomenon which governs them all, that is, on irritation, diversified according to the tissue which it attacks. With this valuable knowledge, the practitioner derives advantage from the ancient notions respecting exutories, by referring their effects to revulsion; but he does not, like our predecessors, repose such confidence in that description of remedies, as to neglect to combat the irritation in its new seat. If it be demanded why the ancients obstinately continued to act thus, we will find the solution of it in ontology. It is because that in combating a marked or degenerated morbid entity, they could entertain three ideas only: that of treating it by specifics which were appropriate to it in its original seat; that of recalling it to its first seat by stimulants; and finally, that of drying up by evacuants the source of the morbific humour which might keep up the disease. Whatever reasons may be adduced to justify the ancient doctrines, and clear them from the reproach of ontologism, we think that they cannot be relieved from it. The dynamic theory, the only one which could be available against our assertion, is valueless for that object; for debility, which is considered as the cause of the engorgements under consideration, had its specifics in stimulants which were rarely capable of remedying these diseases; and when they failed, there were no other data to furnish curative indications, unless by resorting to empiricism, or to the other systems, the inconveniences of which we have just pointed out.

The indications not to be found in the ancient authors, for the cure of the diseases alluded to in the proposition at the head of this commentary, are to be derived from the reference of these diseases to irritation, determining an afflux of fluids and deranged nutrition, and the classification of this irritation with other analogous grades, of a degree inferior to inflammation. It belongs to experience to determine the value of these indications; but it has already decided, as we shall be able to prove in the therapeutic part of these commentaries.

PROP. CLXXXIX.

The fat and lymph which form the cellular engorgements with induration are always degenerated; and if softening supervenes it is because inflammation is developed in them. This takes place in encephaloid, melanotic and scirrhous tumours, &c.; hence cancers, which supervene also to tubercles.

The fat, lymph and other secondary humours degenerate as soon as they are no longer submitted to the normal influence of the tissues, which ought to serve them as receptacles for a certain period. We are not able in the present state of the science, to determine how far these humours may prove distressing or irritating to the already super-irritated tissues which contain them; but we know that in some cases they are really so.

Softening is not the cause of the inflammation which is supposed to disorganize these tumours; the former is rather the effect of the latter. What proves this, is, that the more they are irritated under an idea of producing their resolution, the sooner they soften and pass to the inflammatory state which causes their destruction, and if there be a means of preventing this softening, it is to cure the irritation which induces and maintains the engorgement.

There is another fact which supports the preceding views; which is, that in case these tumours are incurable, their inflammatory softening may at least be prevented by the antiphlogistic treatment, and in proportion as they are relieved from their irritation, the more firm they become, and they sometimes attain such a degree of induration as to finally remain during the whole life of the patient, like inert tissues and innoxious foreign bodies, which do not incommode the healthy parts, except by their size and weight. These facts, fully verified, ought to serve as the foundation for the curative indications; they consist in destroying the irritation which has produced the congestion. We have the double chance of curing the latter, if resolution is possible, or if

it is not of reducing the tumour to an inert mass compatible with the existence of the individual. There are some cases in which irritants may promote this salutary induration, but it is not easy to determine them; most frequently resolvents indurate engorgements solely by augmenting the irritation which has produced them, by preparing the so dreaded consecutive softening, which is the symptom of the cancerous degeneration.

We believe, moreover, that the white tumours of the cellular tissues, medullary sarcomas, scirrhus resembling the pulp of orange, which have no tendency to this kind of induration, continually act upon the viscera by a sympathetic influence analogous to that which we have noticed as exercised by ganglionic masses, and induce phlegmasiæ and sub-inflammations, which continue their progress, notwithstanding the ablation of these engorgements, where it is possible to operate upon them, and entail most frequently the death of the patient. No irritation can remain entirely isolated in the living system. A scirrhous engorgement, which is absolutely unattended with pain, is the seat of an internal organic action of irritation, which augments the temperature of the diseased spot, and every organ sufficiently excited to be warmer than in the normal state, sympathetically influences the viscera in general, establishes a habit of irritation, which is already of itself something bad when of long continuance, and ultimately becomes converted into a disorganizing action, which prepares the viscera for the catastrophe of which we have just spoken.

The practice empirically accredited in these cases, furnishes additional support to these views. We hope to succeed in preventing a relapse in persons who have been relieved from a scirrhous tumour by an operation, by establishing an issue; sometimes we succeed, and the suppression of this exutory is quickly followed by a return of the first affection; hence the popular prejudice in favour of preserving issues during life. How can the exutory act in such a case? The ancients ascribed its good effects to the discharge it gave to the peccant humours. But the quantity evacuated by it is so small in comparison with that which is necessary to relieve the individuals from all new congestion, and the supposition of a particular humour, provocative of the relapse, exclu-

sively attracted by the issue is so absurd, that we cannot stop for an instant to consider such explanations. It is certain, that if an issue or a seton can be productive of any benefit to persons freed by an operation from scirrhous masses, it can only be by keeping up an external irritation, which may suspend or diminish that established in the viscera. This explanation, the most plausible of all, since it flows from the best ascertained facts, may be productive of safety to many patients, by engaging their physicians to graduate the artificial irritation to that which has been removed by the ablation of the carcinomatous tumour. We are astonished that a similar idea has not been long since suggested by the contemplation of the facts under consideration.

As to the cellular engorgements and indurations, which occupy the interstices of the internal organs, we cannot depend upon any means capable of resolving them, when they have acquired a high degree of intensity. It is then necessary to endeavour to prevent them, and we shall succeed in this if we are deeply imbued with the principles of physiological medicine; that is, if we impose on ourselves the duty of never neglecting an irritation, however light it may appear to be. As to the means, we must postpone the detail of them to the proper place.

PROP. CXC.

When irritation has prevailed under the form of inflammation, or of sub-inflammation in the tissues of the articular or arterial membranes, and other tissues naturally dry and but slightly extensible, there is an extravasation of albumen, which dries by absorption, and is converted into calcareous concretions; as, for example, in gout. These concretions are then the effects of irritation. The case is the same with those which form in the midst of lymphatic ganglions which have become tubercular, and sometimes in the mucous follicles.

This fact is well worthy of attention; before the existence of

the physiological doctrine, the formation of these concretions could not be accounted for without having recourse to humoralism. But as that of Boerhaave and the mechanical physicians had no longer any credit, and as, on the other hand, the theory of tartar of Paracelsus had been overthrown by modern chemists, it became necessary to borrow from these last the humoral explanations which were required. The phosphoric acid removed all difficulties. It was supposed to be free and detached from the bones, without the cause of this being shown, and even without the trouble being taken to prove that the bones of gouty persons had less calcareous phosphate, and were less solid than those of other subjects. It sometimes happens that in persons who have long suffered from gout, the articulating extremities become softened. These facts, the true explanation of which we have already given, sufficed to remove all difficulty. Physicians generalized them unscrupulously, and because the bones sometimes became soft and friable in some old gouty subjects, the conclusion was jumped at, that as soon as a person is attacked with gout, his bones have necessarily lost a portion of their calcareous phosphate. The acid is evacuated with the urine, and the lime determined to the articulations, was the sole cause of the violent pains which the patients experienced in those parts.

This explanation perfectly resembled that of the ancient physicians, who believed that nature had no better means of relieving herself of gross and earthy humours, than to throw this gross excrement upon the tissue of the small joints, a tissue moreover so irritable, so difficult of extension, and so little suited, in a word, to serve as an emunctory. Hence the wise precept to respect this salutary effort, that is, to let the patients suffer.

It is scarcely credible, that at the present day intelligent persons could entertain such wretched notions respecting vital phenomena. However, it is perfectly evident that the explanation of modern chemists is only that of Musgrave, and other humoral pathologists of the middle ages in a modern dress. Scudamore himself, notwithstanding his gouty hepatic inflammation, could not divest himself of the explanation of articular calculi, without admitting a certain kind of alteration of the humours. The fact

indicated in the proposition is as simple as it is true: lymphatic fluids, rich in calcareous phosphate, are attracted by the irritation into cellular tissues possessing little extensibility, and strongly adhering to the ligaments and tendons. At each attack of the disease a new layer of this calcareous phosphate is deposited in the cellular tissue alluded to, and the approximation of the paroxysms does not allow of time for the old layer to be reabsorbed. It is there, in these masses of lymph, in part extravasated, and in part subjected to a feeble vital action, and losing by absorption all their liquid particles, that the molecules of the phosphate of lime collect, bringing with them a considerable quantity of animal matter to form those concretions which are so inconvenient in old gouty subjects.

This mechanism is compared in the proposition to that which presides over the formation of the calculi that are sometimes discharged from the tonsils and mucous follicles of the larynx in the chronic phlegmasiæ of these organs. It is similar to that by which the calcareous nuclei are formed, which are sometimes met with in the centre of tubercles of the mesentery, and which in some cases appear to be the transformation of an entire ganglion. The author would also compare these concretions with those which are formed in the salivary ducts and even in the pelvis of the kidneys. The same laws preside over all these kind of concretions. Two principal phenomena are always met with: accumulation of fluids subtracted from the circulation, but still subjected to a certain extent to the vital influence of the tissues animated by a vicious organic irritation; and absorption or elimination of the fluid parts.

The lardaceous or fatty tissues are the only ones among those we have enumerated which are exempt from these concretions; but they may be met with in all those in which albumen and gelatine predominate; such among all those of which we have spoken, are the brain, the neurilema of the large nerves, the arterial tunics, as stated in the proposition, the tendons, all the serous membranes, as well as the fibrous, &c.; and moreover it is evident that a chronic irritation, an irritation really sub-inflammatory, has presided over their formation.

This explanation, founded upon innumerable facts, it appears,

should prevail hereafter in the French school, and forever close the doors to the chemico-humoral theories, which have so long retarded the progress of the healing art.

PROP. CXCI.

A black colour often exists in lymphatic tumefactions; this is what is called melanosis.

Researches have several times been undertaken into the nature of melanosis. Some persons regard it as a production *sui generis*, destined to become the seat of cancer; others have believed that it was only decomposed blood infiltrated into the parts. We believe, moreover, that there are several species of melanosis, or to express ourselves in such a manner as not to suppose an entity, that there are many causes of the black colour so often met with in the bodies of those who have died from the consequences of chronic phlegmasiæ.

Commencing with the melanosis which is the subject of the proposition, we may say that it is nothing but the pulmonary tissue become black from the effect of age. This black colour is never seen in young subjects; in them only a few black points are met with, but as age advances and the black points on the serous surface of the lungs increase in number, the black spots in the interior also become more numerous; finally, when the individual reaches a very advanced age, and even without disease, the surface of the pulmonary lobes is almost entirely black; if there exists tubercular masses in the parenchyma, we may be satisfied that they will be entirely black. We have several times verified this; that is, we have convinced ourselves that a tubercle either of the bronchial ganglions or of the parenchyma, which would have been white or yellow in a young subject, is always black in an old person. Hence as we have several times said, the error which has led some physicians to advance that melanosis of the lungs was a particular phthisis, distinguished by being attended with little fever, and by the patients, who are always aged, having a disposition to œdema. These authors have evidently

described the chronic pneumonia of old persons; and, as the lungs must be black in such persons, they have taken this blackness for a proof of the special character of what they have named *phthisis* with *melanosis*.

The black colour is also observed in chronic peritonitis. In this membrane it, in most cases, depends on blood extravasated between the laminæ of the omentum and in the cellular tissue, interposed between the different folds of the peritoneum. Those who have studied the pretended entity melanosis in this region, have come to the conclusion, that it consisted in a tissue infiltrated with decomposed blood.

The black colour rarely fails to be developed in the mucous tissues which have long suffered from inflammation; it is this which causes those vast black and brown spots, and those blackish zones which are found in the stomach and intestines after chronic gastritis and enteritis. It would be difficult to determine whether this deep colour is, or is not formed by blood extravasated or diffused in the tissue of the membrane more intimately than it ordinarily is in phlegmasiæ, in which is seen only the more or less deep red colour; but we have ascertained that these black spots are effects of inflammation; or rather, if the expression is preferred, we cannot yet determine why some gastro-intestinal phlegmasiæ leave as their sequelæ the black colour, whilst others leave the red or violet only. We have remarked, that the black colour diminishes subsequent to chronic inflammations; we have also found this after the acute; but in most cases it has appeared to us, that the acute had been preceded by chronic phlegmasia, and in our opinion it is this which most certainly produces the black colour of the mucous membranes.

The cellular and areolar tissues interposed between the different organs, become black in the fistulous foci and sinuses, which succeed phlegmon, when there is not a free exit for the pus. Should this kind of melanosis be attributed to the same cause which produces that of the peritoneum? It is possible that one day, and that day must not be very remote, that it will be proved that the molecules of the blood, altered in a particular way by inflammation, are the principal cause of this blackness, so common in old foci of phlegmasiæ; but we think that the black

colour of the bronchial ganglions ought not to be attributed to this cause. In these parts the black colour appears to us to depend upon the functions of the organ, that is, upon the carbon of the venous blood, and which ultimately communicates its colour to all the tissues of the respiratory organ.

But this idea has suggested to us another. If cupping-glasses or leeches be applied to two portions of the cutaneous surface, one inflamed, the other not; it will be observed that the blood detracted from the first will be black, and that drawn from the latter of a beautiful red. May we not deduce from this, that inflammation renders the blood blacker than common in the tissues which it occupies; either by causing a predominance of the veins, or rather in compelling the blood to remain in them, which must render the colour deeper, which it assumes in circulating through the capillary system? This explanation, if it were admitted, would have the great advantage of connecting all the melanoses together, and of destroying the marvellous with which it has been attempted to invest this kind of alteration.

Moreover, whatever may be the mode in which the organic and chemical causes of melanosis are explained, there are, in relation to that point, two facts, which appear to us to be incontestible: the first is, that melanosis is not a peculiar tissue, foreign, and without any analogy in the system; the second, that it is a product of prolonged irritation of the organs, especially of that degree which is termed inflammation.

In accordance with these reflexions, the proposition should be expressed in the following words:—"*A black colour often exists in the foci of chronic inflammation and sub-inflammation, and it is this which is termed melanosis.*"

PROP. CXCII.

External cancer, the product of irritative degeneration of the tissues, in which albumen and fat predominate, is always attended by inflammation; it is not incurable whilst it is merely local.

This proposition indicates that the occult and really sub-inflammatory irritation which maintains the tumefactions in question, becomes exalted when they change into cancer; or rather that the inflammation which softens, dissolves, ulcerates and destroys the indurated parts, is only the sub-inflammation which kept up the engorgement, and which assumes an increased activity. It is in order to convey an idea of these two distinct grades of irritation, that which maintains the sarcoma, and that which converts it into a purulent mass, that the author has termed the latter mixed inflammation; an expression founded upon the fact of the bulk of the tumour as yet affected with only sub-inflammation, whilst the surface, more actively irritated, and more injected with blood, is destroyed by true inflammation. The principal cause of this increased activity is, that the skin, in which the ulceration commences, is cellular and more sanguineous than the subjacent lymphatic mass. It is the phlegmasia then of this envelope and of its areolar layers which, after having destroyed this part, penetrates into the sarcoma, and heats and destroys it also. It may be remarked, that there is always more inflammation in the cutaneous border, surrounding cancers, which become ulcerated to any extent. These remarks are applicable to the mucous membranes in cancers of the visceral cavities.

The second part of this proposition in which it is stated, that even ulcerated cancer, so long as it is only local, is not incurable, ought not to be understood as referring solely to ulcerated sarcomatous tumours. It is possible that the tumour, before having even reached that degree, may have already reacted on the viscera, and even with some activity. We have illustrated this in the preceding commentaries.

PROP. CXCIII.

The inflammation of external cancer is repeated by sympathy in the principal viscera; but the cancer is not developed in them, except as a consequence of this inflammation. It may not form in them even then, the

cancerous diathesis is consequently not so common as is believed.

In fact, the influence of ulcerated cancer is the same as that of inflammation, and the influence of both is similar to that exercised by phlegmon or erysipelas. This is proved by post mortem examinations, which very often present in the viscera nothing but phlegmasia; this formerly caused us much surprise. However, as the ganglions and areolar tissues of the visceral apparatuses are usually affected after phlegmasiæ of these organs, and as they become affected even when the irritation is transmitted to them by any other source besides the influence of a cancerous focus, it ought not to be considered strange, that when it arises from such a source it should ultimately produce tubercles and scirrhus. There is still more reason why the visceral affection arrived to that degree, when it has been maintained for a long period by a sarcoma, should slowly become transformed into a true cancer, and that as much more readily as the lymphatic irritability is more marked in the patient.

It results from these observations, that is, because it is not true, as was formerly supposed, that persons affected with cancer and succumbing to the progress of this disease, owe their death to the repetition in the viscera of engorgements and ulcerations analogous to those which are seen on the exterior of the body; it is because their condition is often, as respects their internal tissues, similar to that of a patient in whom marasmus would be caused by an affection entirely different from cancer, as from a wound with fracture of the extremities; it is for all these reasons that it is advanced in the proposition that the cancerous diathesis is not so common as is supposed, and we may add the cachexia; and in future, Proposition, CXCIII, will contain the latter phrase as follows, "*The cancerous diathesis and cachexia are not so common as is supposed.*"

PROP. CXCIV.

The progress of cancer is always in proportion to the inflammation which exists with it.

This proposition is a deduction from the preceding. If it be true that cancer acts upon the viscera by transmitting irritation to them, the degree of this irritation should be in proportion to that of the inflammation which excites it. Very important therapeutic deductions are to be drawn from this, which we shall detail in another place.

PROP. CXCV.

All the inflammations and sub-inflammations may produce cancer.

This is a fact which it is very important to place in the clearest light, because physicians constantly reason in a circle, in the most incorrect manner, in relation to these diseases. When an eroding ulcer occurs at the surface of the body, they endeavour to discover its cause. If they can suspect a venereal, scrofulous, herpetic or other principle, for there are many other species of it, the ulcer is named and treated accordingly. If it be cured, it retains its epithet; if all attempts to arrest its progress are vain, it is declared to be cancerous. It even sometimes happens that it is necessary to recal this last epithet in consequence of its having been given too soon; and it is necessary to do that whenever the disease is cured, since it is agreed that cancer is incurable.

When no cause could be assigned for inflammations which were supposed to arise from a *humoral* principle, curable by specifics and depuratives, and in cases where the eroding ulcer was formed on a chronic engorgement, the title of cancer was at first bestowed on it; if, however, notwithstanding the prognosis of the physician, the patient was so fortunate as to recover, the first diagnosis was obliged to be abandoned, and if the ulcer could not be attributed to any virus or any morbid principle, it was finally said that it was an ulcer simulating cancer, but not of the same nature as that disease; and all this because cancer must necessarily be an incurable disease.

That a disease termed cancer should exist, which must neces-

sarily be beyond all the resources of art, is what a young physician would readily suppose at first; but when he demands the distinctive characters of this disease, no one can give them to him; no practitioner knows whether an external ulcer was really of a cancerous nature, until the death or cure of the patient revealed to him this great mystery.

The appearance of the ulcerated surface not furnishing sufficient data for the solution of the question, physicians have had recourse to the subjacent tumefaction. They undertook to assign characters to it, but did not agree what these characters were. Some thought it must necessarily be a medullary sarcoma, a kind of opaque lymphatic tumefaction, having some relation in colour and consistence to the brain; others that it was a lardaceous tissue; some preferred attributing it to a tissue having a fibrous appearance, formed of gelatine, resembling the pulp of an orange, (all the tissues may in fact partake in the ulceration of the skin, or of any other membrane of relation;) but eroding and incurable ulcers were also pointed out to them, developed on the surface of the skin and external mucous membranes, without any of these tissues having been previously formed. At the present time we can show them encephaloid, lardaceous, and scirrhous masses, some of which have been removed by the knife, and others have been cured by the application of leeches.

It may also be demanded of them, why, if there must always exist one of their tissues privileged for the formation of cancer, they do not give this name to scrofulous, scorbutic, leprous or herpetic ulcers, &c. when all their endeavours to cure them have been ineffectual. The same question may be put to them as regards all ulcerations which they do not attribute to any virus, and it will be seen that their answers will always be uncertain. They have no means of ascertaining either by the touch in feeling the tumour, or by the appearance of the ulcer, whether it will be cured or not, and as the essence of cancer is in its incurability, they cannot give or withhold this name till after the event.

Such was still the state of the science when the propositions in the *Examination of Medical Doctrines* appeared, for what the author had already written some years previous on the same subject had not made a sufficient impression. The erroneous circle

in which medical men revolved, in reasoning on phthisis pulmonalis, equally served them as regarded the theory of cancer, and it was to free medicine from these disgraceful ambiguities, these shocking contradictions, that the author having given in a detailed manner in the *Examination of Medical Doctrines*, all the demonstrations which the nature of these two diseases appeared to him susceptible of, made a summary of them and inserted them in his general propositions. We have seen, in the proper place, those which related to phthisis pulmonalis; as to those under consideration, we have but little to say to explain them, it will be sufficient to refer to facts in as concise a manner as the subject will admit.

All chronic inflammations of the surface of the body may, if immediately irritated whilst the gastric passages are stimulated, be converted into eroding ulcers; and these ulcers, becoming incurable by the destruction which they have occasioned, by the depth to which they have penetrated, as well as by the progress of the concomitant visceral irritation, become what authors have called cancers.

All external sub-inflammations are not precisely in the same predicament, because there are some among them, of such an indolent nature, that nothing can develope in them the degree of irritation necessary to induce the disorganizing phlegmasia.

As to phlegmasiæ of the viscera, it is seldom that they are so destitute of irritability that stimulation will not produce the eroding and disorganizing state in them, when it is repeated violently and incessantly. The only exceptions to this rule are the white or lymphatic engorgements, situated beyond the influence of irritants into the gastric passages, as tumefactions of the ovaries, those of the inter-visceral fatty tissues, which are often insensible to the stimulation of the internal surfaces of relation; we sometimes see them continue during life without undergoing the cancerous degeneration. There are cases, however, where their volume having occasioned their adhesion to the skin, this being more irritable and sanguineous than they are, and being excessively distended, is attacked with a chronic phlegmasia, which first ulcerates it, and after having

destroyed it, reaches the hitherto indolent tumour, and invests it with the cancerous character.

The same alteration may take place in these tumours, from the ulcerated surfaces of internal mucous membranes, when they are situated sufficiently near to each other. It is thus that the tumours of the bronchial ganglions, which for a very long time were preserved exempt from any solution of continuity, may be implicated by an ulceration of the mucous membrane of the bronchiæ, which, after having destroyed this membrane, attacks the gland which adheres to it, and penetrates more or less into its substance.

The same disorder may invade the liver or the spleen, when ulceration has perforated the stomach or an intestine adhering to these indurated parenchymata.

It is only very dry or very moist engorgements which cannot be attacked by the disorganizing phlegmasia, and which are in no danger of cancer. Finally, to terminate by the most general fact, all chronic inflammations and sub-inflammations susceptible of being exasperated by the action of stimulants, may, if they be long subjected to this proof, be converted into cancers.

PROP. CXCVI.

Inflammation of the serous membranes assume only two forms, the one acute, very painful, and attended with much fever, the other chronic, almost indolent, and apyretic. This last is confounded with the sub-inflammations.

It was long a matter of astonishment, that the serous membranes, which are not furnished with nervous cords similar to those of many other tissues, and which have no sensibility in the normal state, should become so sensitive when they are heated by inflammation. The same surprise was testified, and for the same reason, as respects the sensibility of the tendons, and several others of the white tissues.

It was not recollected that the arteries are always surrounded with nerves which accompany them into the capillary tissues. It has not been deigned to represent things as they are, that is, the nervous matter intimately incorporated with the tissues, and forming a part of their composition in a manner, that as yet the delicacy of our instruments has not permitted us to discover. It does not appear to have been understood that this substance always acts, at least locally, in the organic functions, without communicating to the central nervous matter, a stimulation of which *the self* can have a consciousness; but that when the tissue, of which it forms a part, has become more vital by inflammation, of which this matter is the principal instrument, the arterial nervous cords which communicate with it suffice to transmit the stimulation to the brain, and for pain to be developed; but as soon as the pain is developed, all the sympathies which result from it must be attributed to the central medullary apparatus.

There is always an affectation, from a kind of superciliousness, the origin of which we do not comprehend, of neglecting this mode of viewing things and of placing each sensorial or motive function in a pair of nervous cords; as if the cords were the powers, and that the whole of the functions of relation was a sort of oligarchy or aristocracy of nervous powers, each residing in a particular nerve. We shall but too often have occasion to revert to this theory, the hollowness of which we have already demonstrated in our treatise on physiology. It is already evident how insufficient it is to explain the pains and sympathetic disorders of serous phlegmasiæ, how easy it is to form an idea of them, by considering them in the mode we have just pointed out.

It is not less worthy of remark, that the serous membranes are, as it were, painful only for a moment, that while they are so, the sufferings in them are extreme, and that they again become almost indolent in passing to the chronic state. We say *almost*, for there is still pain in them in these chronic phlegmasiæ, especially if they are sufficiently intense to keep up a febrile action; such are several chronic pleurisies and peritonites; but the pain is not complained of as an habitual uneasy sensation, it is evident only on pressure, percussion, and certain motions of the body. At the same time we cannot avoid admitting

that the serous phlegmasiæ do not present those numerous grades of sensibility, whether local or sympathetic, which we remark in phlegmasiæ of the mucous membranes.

It is with apparent reason that the proposition attributes this difference to the fact, that the mucous membranes are naturally the internal senses, the originaters of a greater or less number of the sympathies, whilst the serous membranes become so only in the inflammatory state. It is as if it were said, that a part which is sympathetically connected with a greater number of organs than another, must also implicate a greater number when its sensibility is exalted by inflammation. We do not believe that a valid objection can be urged against this view of the question.

It appears to us that what causes the violence of the pains in the acute stage of serous phlegmasiæ, is the sudden creation of a new sense, to which the nervous centre was not habituated, and the organ of which is inflamed as soon as it is perceived; but when the inflammation becomes chronic, this sense having lost its activity, must necessarily fall below the normal senses, from having a less perfect organization; and besides, as it has fewer nerves which place it in relation with the centre, it is evident and natural that it deranges the functions of this part in a less degree.

The same reasoning is doubtless applicable to all unusual points of sensibility, which may be developed in the economy by inflammation, and particularly to phlegmon, hence we have not dispensed with this explanation. Individuals fitted to comprehend physiological phenomena, will appreciate the value and may even foresee all the applications of it. As to physicians who are only guided by mechanical views, and can only see physical laws in life, it is not to them we address ourselves.

Proposition CXCVI states that chronic phlegmasiæ of the serous membranes confound themselves with the sub-inflammations; in fact these membranes experience a separation of their laminæ, and become engorged with a lymph, which we may state in passing, must contribute to blunt their sensibility; so that finally they resemble the engorgements of scrofulous patients, or those which are remarked around articulations which

have been several times tumefied by gouty attacks. We also find there effused and infiltrated blood, producing what has been termed melanosis, without speaking of false membranes or concrete pus, and effusions or liquid pus covering the free surface. It is in this state, the radical cure of which is impossible, at least when it is general in very extensive serous membranes, that these kinds of phlegmasiæ have really lost the inflammatory character to assume that of sub-inflammation; and it is of great importance that the physician should always bear this in mind, to have motives for action, and not to be restrained in the acute stage by the ridiculous fear of causing too great debility.

PROP. CXCVII.

The inflammations of the mucous membranes present more numerous forms and degrees than those of the serous, because as organs of the internal senses, abundantly provided with nervous matter and constant movers of the sympathies, the mucous membranes are endowed with a more varied and intense sensibility and irritability than the serous, which in the healthy state possess neither sensibility nor sympathies.

After what we have said, there will be no necessity of commenting on this proposition. Some physicians still persist in only viewing the mucous membranes as organs of reception and expulsion to the foreign bodies destined to furnish materials for absorption, and for the products of the secretories: we are content to refer such of our brethren to our treatise on *Physiology applied to Pathology*.

PROP. CXCVIII.

All hæmorrhages not caused by external violence, and which are spontaneous, are active, whatever may be the debility of the subject.

If all the phlegmasiæ are active, all the hæmorrhages must be so; for it is clear that the abnormal modification which produces the first, does not essentially differ from that which produces the latter. There is no cause in the debility or relaxation of the fibres, why the blood should be effused from the vessels in which it circulates, to be extravasated on the free surface of the organs. No explanation can be given of such an extravasation, except by supposing a force which accumulates the blood in the part, whose superficies permits itself to be penetrated by the sanguineous globules, and this force varies in different cases. In some it is an impediment to the return of the blood from the engorged part to the heart, as ligatures, and the compression or obliteration of veins. In others it is a mechanical compression exercised on an organ which tends to force out the blood from it; this may also be considered as an obstacle to the return of the blood. Except these cases of extraneous force, the application of which, however, may be much diversified, and whenever the circulation is free, the force which accumulates the blood in a tissue, or occasions the hæmorrhagic exudation, must be referred to irritation. This is the proper place to present a summary of the proofs we have already given of this assertion, and we will do so as briefly as possible.

Let us take for a type the menstrual hæmorrhage; when it is preparing, an irritation is developed in the uterus which causes an afflux of blood there, as is proved by the local and sympathetic phenomena which precede the appearance of the discharge. The congestion having taken place, the blood which constitutes it, exudes from the internal surface of the organ, and in a few days this hæmorrhage dissipates the congestion. There is, it is true, between these two facts, the afflux of blood and its evacuation by exudation, something of which we are ignorant, some circumstances of organic modification, the solution of which is not yet discovered; but those which have been discovered are not the less real; let us see if they will be found in other hæmorrhages.

The inferior extremity of the rectum becomes hot; the mucous membrane is filled with blood, and when this plenitude

has reached a certain degree, sanguineous exudation takes place and dissipates the congestion.

The same phenomena occur in the nasal region: a sensation of fulness, redness, and bloody exudation; the lungs, the stomach, and all the other internal organs susceptible of hæmorrhagies, constantly present the same succession of phenomena. Now as long as this succession can be distinguished, the hæmorrhage is termed *active*, but when the patients are debilitated, it is not found so well marked, and the hæmorrhage is called *passive;* as if, after having depended on irritation, it could be the effect of debility; this contradiction is the more singular, as the debility itself is attributed to the hæmorrhage. Conceive then of a loss of blood which is at first occasioned by an excess of vitality, and which, when it has diminished, this superabundance of life becomes the effect of the debility which it has itself produced.

However absurd such reasoning may appear, physicians have not blushed to use it; we have known them alternately call it active, then passive, and again, after some period of restoration, a second time term the same hæmorrhage in the same patient, active.

When the debility of patients was extreme, they did not discover the congestion preparatory to the discharge, and nevertheless it is never wanting; it is less marked, but an attentive observer can recognise it. These kinds of hæmorrhages are never continued, and the instant which precedes their return is always marked by a sensation of weight and heat, which is dissipated by the spontaneous effusion of blood.

To render the active character of spontaneous hæmorrhage less doubtful, even in the most debilitated individuals, we again recurred to the inspection of the organs, and we proved that all the losses of blood which are found at the head of the passive hæmorrhages of authors, occur from surfaces which are a prey to chronic inflammation. It evidently results, that if these hæmorrhages are passive, the phlegmasiæ which occasion them must likewise be so; but how can we term an inflammation passive, which took place whilst the patient was vigorous, plethoric, and superexcited? It was so completely considered as active at this period, that it was combated by the antiphlogistic treatment; now it is

this same inflammation which was not cured, which now occasions hæmorrhages. Can it now be supposed to be the product of the debility which is the effect of it? The believers in spontaneous passive hæmorrhages, maintain that they depend on a paralysis of the pores of the part which furnishes them. We would ask them, why it is that the most vital parts of the economy are constantly the seats of these sanguineous effusions; why the foci of inflammation should furnish them more readily than the other tissues; why the loss of blood is not continual, whilst the debility is so, and since the circulation is never interrupted; why, finally, parts attacked with paralysis, far from offering examples of them, rather present a constant diminution of the calibre of their vessels, loss of colour, wrinkles, atrophy or œdema?

Certainly every tissue from which a hæmorrhagic discharge takes place is super-irritated; observation of the mode of action of the agents which have made it deviate from the normal state, proves this equally with the local and sympathetic phenomena, which it presents. Whether these tissues are ulcerated, as the lungs in consumptive patients, the neck of the uterus in cancerous females, or are not ulçerated, as the nose in individuals who are exhausted by constant recurrences of epistaxis, produced by the sympathetic influence of an intense phlegmasia; these tissues, we repeat, are always the seat of an irritation, which causes a continual afflux of blood to the part, but which, sometimes acquiring increased activity, accumulates there to such a degree, that its return into the circulation is no longer possible, and a portion must escape by the free pores of the diseased part.

It is true, that when a tissue thus modified, has suffered for a long time, it offers less resistance to the hæmorrhage; it is also true, that it in fact becomes debilitated, and more permeable at the moment of the congestion; in short, it is certain, that the diminution of its contractile power favours the return of the hæmorrhage. But this change is always an effect of irritation; it is analogous to all the debilitated states which are consecutive to super-excitations, which can never be considered as the cause of the diseases of which they are themselves the result. As well might the exhaustion which succeeds a peripneumony be accused

of being the cause of this inflammatory affection, or the sanguineous injection and tendency to relapses, forms of debility, which are observed in parts of the skin and mucous membrane, which have been cured of inflammation, be considered as the causes of these same inflammations. All that can be advanced with any foundation is, that these forms of debility, which may be considered as a diminution of the force of permanent contractility or tonicity, or if it be preferred, as a greater mobility and a less resistance to extension, in short, as an augmentation of irritability with diminution of force, require some time to disappear, when they succeed to inflammation or hæmorrhage, and that, whilst they last, they favour the action of the causes which tend to reproduce these diseases.

This mode of explaining the facts is very different from that employed when hæmorrhages were divided into active and passive; such a division supposes two different entities, and entirely opposite natures in the same disease, and consequently two orders of indications diametrically opposed to each other. In this consists the great error, an error truly prejudicial to mankind, because it leads to a very erroneous practice. In fact, it is a widely different thing in a chronic hæmorrhage to find only a consecutive, purely local debility in the part from whence the discharge takes place, furnishing particular indications, without prejudice to those resulting from the irritation which presides over the morbid state of the patient, from viewing this, both locally and generally, only as a debility, affording of itself all the curative indications. We shall assume this distinction to establish the therapeutic indications of hæmorrhages.

PROP. CXCIX.

Spontaneous hæmorrhages depend upon an irritation of the sanguineous capillaries; but they occur more easily when there is hypertrophy of the heart.

We think, in fact, that all the phenomena tend to prove that the irritation which provokes the discharge of blood, has its

principal seat in the capillary vessels of the part, and are even led to believe that it resides in the small arteries. In fact, when the arteries have reached a certain degree of tenuity, the nerves which accompany them are, in a great measure, lost in their coats, and must communicate to them an activity which they did not before possess; now, it is in these kinds of nervous sanguineous vascular tissues that the sympathetic stimulations are felt; for example, that a part amply furnished with these capillaries, suddenly becomes red, and swells under the influence of some violent moral affection, and that another part, similarly organized, becomes injected, and if it be a secretory, suddenly ejects its peculiar fluid from the effect of a thought, or from the sympathetic influence of another organ in a state of irritation. In all these cases, must we not recognise a nervous influence; and this influence, which is only an innervation, could it give an impulse to the fluids, if it was not absolutely exerted on the very fibres which compose the small vessels?

Well! we dare maintain, it can only be this activity of sanguineous capillaries, with parietes composed of nervous matter, mingled with the proper coats of the arteries, it can only be this activity which accumulates the blood in a tissue, with augmented heat, perceptible to the touch, perceptible to the mind of the individual, and with a sensation of tension, fullness, and itching, or even with acute pain; now, this force having produced the congestion, the state of the blood which occasions it, and which collects in those small arteries of the part which are less active than the capillaries which have propelled it there, differs according to conditions which are not perfectly known to us; sometimes it remains and keeps up a phlegmasia, and this is so true, that if issue be given to it by a local bleeding, the phlegmasia is arrested; sometimes it escapes by the free surface of the congested spot, constituting the phenomenon of hæmorrhage.

It is evident that the disposition of the pores of this surface must alone determine the difference which exists between the inflammation and the hæmorrhage. It is then this disposition that must be thoroughly known, to enable us to reason in a perfectly satisfactory manner on the proximate cause of either result of sanguineous congestions, and to find the best curative indica-

tions. We shall not undertake to fathom this question; we shall be content in illustrating the succeeding proposition to demonstrate by facts, that the two results succeed and replace each other, so as to leave no doubt as to the identity of the vital action which occasioned them; I allude to the capillary activity which produces the congestion.

Now, it may, without difficulty, be understood how excess of energy in the heart facilitates the discharge of blood which forms the local congestions, of which we have just spoken. It will be admitted, we hope, that this energy greatly facilitates them; for the nervous irritation which has suddenly been acquired by the arterial capillaries, the more disposable blood they find in the arteries from which they emanate, the greater facility they will have in forcing it into the adjoining areolæ, and the more rapid will be the sanguineous tumefaction of the part.

This, it appears to us, is a complete explanation of the fact, if the blood, propelled by a hypertrophied and violently stimulated heart, arrives at a focus of capillary irritation in rapid and powerful undulations, the super-irritated small arteries will soon produce congestion; this will take place so rapidly, that the pores of the part will be forced to open, to give issue to the blood, and the hæmorrhage will be prompt and copious.

It is thus, that the energy of the heart renders hæmorrhages easy and common during youth, as the feebleness and languor of this viscus renders them rare and difficult during old age. It is in virtue of this law, that individuals affected with hypertrophy of the heart, remain subject to hæmorrhages, notwithstanding the progress of age, and preserve this aptitude even in advanced life; finally, by this same law, it is explicable why, when the disposition to external hæmorrhages is entirely destroyed, that to internal effusions of blood is not so. In fact, is it not clear that this depends on the impulse of the heart being more strongly felt in the viscera, which are in close connexion with it, than in the mucous openings and in the skin?

It must by no means be supposed, from what has been said, that hypertrophy of the heart is sufficient of itself to explain these hæmorrhages. If it were so, the losses of blood by patients who were affected with it, could never be arrested before the

total loss of power of the heart, that is to say, till syncope is about to take place; and besides, there could be no reason why the blood would not be continually discharged from those surfaces which are most closely connected with the heart, namely, by the porosities of the lungs. It is, therefore, evident, that it always requires a local irritation to produce a congestion, but that this congestion taking place the more rapidly, as the impulse of the heart is greater, the discharge by transudation, that is, by hæmorrhage of the congested blood, must be more common in persons affected with hypertrophy of the heart than in others.

It may be also comprehended from these considerations, how the difficulty which the blood experiences in traversing the heart in cases of aneurism, that is, of dilatation, with debility of its parietes, may, in forcing the blood to remain in the venous apparatus, favour hæmorrhages from the lungs and gastric passages, whenever a capillary irritation has produced a congestion in some one point of these viscera; for there is no example of these kinds of hæmorrhages taking place from the whole extent of the free surfaces of these organs.

It is now evident what is the meaning of Prop. CXCIX, and how important it is to the progress of physiological medicine that it should be well understood by observers.

PROP. CC.

Spontaneous hæmorrhages depend upon the same remote causes as inflammations; hence hæmorrhages and inflammations are complicated with one another—produce one another in the same place, and replace one another in the same or different parts.

This is a condensation of all the proofs we have adduced in our disquisitions on hæmorrhages. The proposition only contains a general assertion of the facts; but is it therefore necessary to enumerate them in a commentary? Is it not known with what facility a congestion, which was accustomed to be resolved by sanguineous exhalation, can change this mode of termination for

another? It suffices to have observed menorrhagias and hæmorrhoids to clear up all doubts on the subject. Is it not equally evident, that many sanguineous congestions, which it was believed must terminate by sanguineous effusion, in consulting the intention of nature, daily deceive our prognosis by preserving the inflammatory, or even only the sub-inflammatory character? Do not the uterine phlegmasiæ of young girls in whom the menstrual evacuation takes place with difficulty, and the innumerable hæmorrhoidal tumours which we observe in both sexes, and which, instead of fulfilling the expectation of the suffering individuals, by giving rise to a salutary hæmorrhage, are converted into irritating affections of different forms, furnish too multiplied proofs of this?

We have already spoken of the facility with which the blood invited by irritation to the foci of a chronic phlegmasia gives rise there to unexpected and desperate hæmorrhages. There is no consumptive patient with ulceration of the lungs who is not exposed to a fatal hæmoptysis. The danger of that vomiting of black blood, which is termed *melæna*, is well known, in chronic gastritis and gastro-enteritis; it is even not uncommon to see the ulcerations on the surface give rise to alarming hæmorrhages, and it is always remarked that they are preceded with an augmentation of local heat with some swelling; wounds themselves, produced by contusing or even incising bodies, sometimes present in their inflammatory state, these kind of congestions followed by a sanguineous effusion, and it is in a periodical manner and of a truly nervous character that they are found to recur.

Finally the transformation of the hæmorrhagic phenomenon into that of inflammation, and *vice versa*, but at periods more or less remote from each other, is daily remarked in a variety of phlegmasiæ, which succeed to the cessation of habitual hæmorrhages, and in the termination of inflammations of the great viscera by hæmorrhages which take place from the skin or by the openings of the mucous membranes.

The amount of all that we have said in these commentaries on hæmorrhages is, that irritation of the sanguineous capillaries, developed under the influence of the same predisposing causes which produced all other irritations, is the appreciable proximate

cause of sanguineous congestions, and that these once produced, the inflammation or hæmorrhage may take place without the greater or less degree of force of the patients authorizing us to divide these diseases into two sections, the one active and the other passive.*

* I think it right, without waiting for a more appropriate time, to publish the following letter, addressed to me by the venerable Chaussier, by that illustrious professor, who never shrinks from any improvement, who does not think he loses his time by examining into new ideas.

"Sir,—The commentary that you have added to your Proposition CLXXXI, recals to my mind an experiment which M. Brenet, then physician at Dijon, related to me about thirty-five years since, and which he has also several times repeated to our colleagues. As this experiment appeared to me to be singular and important, I immediately made a note of it, with all its details. It is as follows.

"To ascertain what changes would be produced in the secretory organs, by irritation, M. Brenet injected into his urethra a weak solution of ammonia in water. Almost immediately after this injection, he experienced heat, smarting, and pain in the canal, redness at the orifice of the gland, and soon after a discharge, at first serous, then puriform, viscous and yellowish, with all the symptoms which characterize an urethral blenorrhagia; he even had swelling, and a painful sensibility of the lymphatics of the groin; finally, to complete his experiment, he had connexion with a young female of his acquaintance, perfectly healthy, and soon after, this female experienced pruritus, heat and irritation of the vulva and a mucous discharge. Baths, mucilaginous drinks, and an attention to diet for several days caused a disappearance of all the symptoms. This case, all the details of which M. Brenet related to me, appears to me, well calculated to demonstrate that a tolerably violent irritation of secretory or follicular surfaces, entirely changes the mode, the nature, the quantity and the quality of the fluids which they secrete in their usual state.

"The truth of this assertion is daily confirmed by all the facts we meet with in the practice of medicine; thus in the healthy state, the surface of the eye is constantly lubricated by a mild, thin fluid, which is neither acid nor alkaline; but when irritation takes place in this organ, even from the introduction of a foreign body, as a grain of sand, a molecule of iron, &c. all the symptoms of inflammation soon occur. The tears then become abundant, they are hot, scalding, of a saline taste, and in flowing over the cheeks, mark their course by a red line, fully demonstrating that their nature is changed, that they have become acrid, and have assumed an alkaline character, which can be readily recognised by an extremely simple process.

"This process, as you will find it announced and even described in the *Nouvelles de la republique des lettres et des arts*, No. XIX. 1785, consists 'in taking the coloured petals of a fresh plant, in making a roll of them, and extracting the colouring part by crushing them on a sheet of white paper prepared without

PROP. CCI.

The neuroses are active or passive, whilst inflammations and sub-inflammations are necessarily active.

The titles of active and passive are given in this proposition to the nervous entities of nosologists. In comparing the neu-

alum. These test papers, specimens of which M. Chaussier sent to M. de la Blancherie, have all the qualities which he attributes to them. After having carefully examined them, it was found that the most of these specimens were so eminently alterable, that they became green from the simple contact of a liquid composed of six drops of volatile alkali in a pint of water; even the weakest acids reddened these papers in the same proportion. It may be mentioned, however, that some of these specimens are more sensible to the alkalies and especially to the volatile alkalies, than to the acids; which is of the greater advantage, as until now, there has been no infallible mode of verifying the presence of alkaline substances.'

"The preparation of these test papers, it is evident, is extremely simple; it is only requisite to rub the surface of a sheet of paper with the coloured petals of a flower, to impregnate it equally, and to cut it into strips which are to be kept in a port folio. For this purpose, the fresh petals of all flowers whose colours are uniform and bright, may be used. Nevertheless, as has been remarked by M. de la Blancherie, all the papers are not equally susceptible of alteration by acids and alkalies. In general, acids are perfectly verified by the litmus paper, usually found in laboratories; but to recognise the alkalies, I must prefer those prepared with the flowers of the mallow, violet, blue bottle, iris, purple rose, red pink, &c. they may even be prepared with the juice of certain fruits, and especially with the skins of ripe red grapes, &c. it is also requisite that the papers should have been recently prepared and carefully kept.

"From a great number of researches and experiments which I formerly made, it has appeared to me, 1st, that in general, in a state of health, that all the soft parts and the greatest proportion of the fluids of the animal body are more or less acid, or if it be preferred, have a tendency to redden test papers; 2d, that others appear to be neither acid nor alkaline; 3d, finally, that some, (as the semen,) are alkaline. But, in a state of disease or prolonged irritation, all contract an alkaline quality, which renders them capable of changing the test papers to a green colour; thus the perspiratory humour, which in a state of health, is always acid, sometimes assumes an alkaline character. The urine, which in a state of health, immediately reddens litmus paper, becomes evidently alkaline, if the kidneys or bladder are in a state of irritation or inflammation; in some cases it even contracts a strong ammoniacal odour, which is perceptible at some distance. It is the same with all the excretions which are aug-

roses with inflammations, the author intended to clearly determine the sense of these two words, that is, to ascertain whether they represented two orders of phenomena essentially different, or

mented by any grade of irritation. Thus, in some cases of coryza, the humour which flows from the nostrils becomes so acrid, as to occasion the swelling of the upper lip, which is generally regarded as a sign of a scrofulous constitution. It is the same as regards the excretions from the bronchiæ or lungs, which always, when the irritation or the disease becomes violent, assume an alkaline character and give a green colour to test papers. The humour which flows from ulcerated cancers or other analogous affections, is also more or less alkaline; it has even appeared to me that in a healthy subject, having a suppurating wound, the pus of which is laudable, that this pus will not, or at least will only feebly redden test papers; but if the suppurating surface be wiped several times, or if it be irritated in any other way, it soon furnishes a clear serosity which then changes the papers to a green colour.

"In here recalling these first experiments, which are of so old a date, I do not propose either to investigate or explain, why, in a state of health, some humours are constantly acid, and if, as has been asserted by chemists, this acidity is owing to lactic, acetic, muriatic, or carbonic acid, nor why a disease or a protracted irritation can change their composition and give them in a short time an alkaline character, or at least render them capable of changing the colour of test papers to a green; my sole object is to present to students a subject for simple and easy researches, which in their botanical excursions they can verify and perfect.

"I will also add a summary of a case, the details of which I read to the Academy of Dijon, in 1795, and which was inserted in their archives.

"M. D. had a fine estate at Fontaine-Francaise, a village about seven leagues from Dijon, at which he spent some time every summer. Having remarked a handsome and vigorous young man, aged from twenty-six to twenty-seven years, whose physiognomy pleased him, he wished to hire him as a domestic, and therefore took him from his mother, who lived in the neighbourhood, and removed him to Paris. But some time after his arrival in that city, this young man became a libertine, and contracted a violent blenorrhagia. The summer having arrived, M. de Fontaine-Francaise, who was ignorant of the disease of his servant, despatched him as a courier, but either from fatigue, the effect of the season, or excesses in food, the blenorrhagic disease was entirely checked, and on his arrival, the young man had a violent ophthalmia of the left eye, with swelling of the eyelid and puriform discharge. The surgeon of the place contented himself with prescribing lotions, which he repeated from time to time. The mother of the young man remained with him to render him those services he required. Nevertheless, the swelling and pain increased, and to prevent the alteration of the other eye, it was likewise often washed with the same cloths and the same decoction. In a short time both eyes were equally affected, and subsequently the sight entirely destroyed. The mother, who wept over the

else have an analogy to each other, and are susceptible of the same subdivision. Doubtless, at the first view, the neuroses may be distinguished as active and passive, as the one present themselves with augmentation, and the other with diminution of sensation and motion. It is not less evident that the same distinction is not at first to be recognised between the inflammations, for it is very certain, that chronic as they may be supposed to be, we always find augmentation of the sensibility with that of heat and colour. I take for granted, that no one is so ignorant as to confound, with some of the ancient writers, the effects of inflammation with the phenomenon itself; for example, a congestion of lymph or concretions in the cellular tissues, an effusion of pus or purulent serosity in a serous or synovial cavity, with the inflammation that has produced these disorders. Those masses of extravasated fluids, are often cold, it is true, after the acute period; but they are always the work of an inflammatory heat, and this, although extinguished at their centre, may still be found at their circumference. Chronic and sub-inflammations cannot therefore take place without an increase of irritability and even of irritation in the parts which are affected with them; there is only a difference in their degree in these diseases, but we never find them opposite in their nature.

misfortune of her son, and wiped her eyes with the fingers she had employed in bathing the eyes of her son, soon contracted the same kind of ophthalmia, and in spite of all the lotions which were used, both her eyes were equally affected and entirely destroyed in the same manner. Finally, this unfortunate woman was recommended to me by the curate of the place, who, in apprising me of the principal facts I have detailed, begged me to examine and direct her what she was to do.

"In examining the state of this woman, whose eyes were entirely shrunken, opaque, and reduced to the size of a small nut, I was struck with a fetid odour which exhaled from the mouth and nostrils, and I found ulcers with caries of these parts, which at that time appeared to me to have a syphilitic character. As this woman was already very old, I limited myself to prescribing a proper dressing, a mild milk diet, and to indicating the different precautions that were to be observed in the case. She went away the next day with my prescription, since which I have had no intelligence of her.

"This letter, my dear colleague is perhaps already too long, but I cannot terminate it without the most sincere assurance of my good wishes.

"CHAUSSIER."

It is not so, I have already observed, with the neuroses, if they be considered on the exterior, in the spot which the patient points out to the physician as the affected part, two states diametrically opposed to each other may be verified. Sometimes the part is too sensible or convulsed, sometimes it has lost its sensibility or motion. Hence the double class of neuroses recognised and admitted in the proposition.

Considered at the exterior, and judged from the first view, the neuroses, in general, are therefore different from inflammations, and the passive appear to be of an entirely opposite character. If, however, we endeavour to fully ascertain the physiological nature of these affections, this difference, which struck us so forcibly at first, will perhaps be less marked, but the subsequent propositions will remove our uncertainty in this respect.

PROP. CCII.

The active neuroses consist in the exaltation of sensibility of the nerves of relation, and that of the muscular contractility and vascularity under the influence of these nerves; they may occur in the locomotive muscles, in the viscera, and in all the capillaries in which the nerves of relation predominate; as for example, the neuralgiæ.

It is clear that this proposition includes all convulsions of the locomotive apparatus, epilepsy, tetanus, chorea and its varieties; all irregular convulsive motions; cramps in which the sensibility of the contracted fibres is so much increased; neuralgias in which may at the same time be observed, when the affected nerves communicate with the secretory organs as the eye, convulsions, pain, injection of the sanguineous capillaries, turgescence, and augmentation of the phenomena of secretion and excretion. This union of symptoms naturally recals to the mind the idea of phlogosis, and if, instead of disappearing spontaneously, the phenomena persist, the neuralgia will be changed into inflammation, a kind of transmutation of which we have several examples. Here then are three kinds of external nervous super-excitations

or active neuroses. Let us recapitulate them; 1st, increase of muscular contraction; 2d, increase of the sensibility; 3d, increase of the phenomena of capillary circulation, of secretion and excretion. As all these phenomena are found in the idiopathic neuroses of the organs of sense, which have not undergone any organic alteration, these neuroses belong of right to the first section of the active neuroses. Let us now see if the internal organs present phenomena of the same nature, and which obliges us to include them in the proposition under consideration.

Whilst treating of augmentations of the sensibility, and muscular and vascular actions, we cannot avoid admitting that all the visceral neuroses should be placed here. These neuroses, in conformity with those nosological arrangements most in vogue, are first, hypochondria and hysteria, two great genera of neuropathia which embrace almost all the active nervous phenomena; next neuroses of the pharynx, larynx, lungs and heart; then those of each of the viscera of the abdomen in particular, and the sexual organs, if they do not form part of the entities, hysteria and hypochondria.

Let it be observed, that all the visceral neuroses are more or less accompanied with active external neuroses. The phenomena of sensibility and motion commence in the viscera, and, when they have there reached a certain degree of intensity, we also see them take place in the external nerves of relation, or in other words, the external neurosis become added, after a certain time, to the internal.

Observe, moreover, that during the whole duration of the internal nervous phenomena, the three exaltations already noticed as occurring in the exterior, take place in the splanchnic apparatuses: 1st, the increased sensibility is evident, although it may manifest itself in forms which do not exactly resemble pains in the periphery; 2d, convulsive motions take place in the muscular fibres of the hollow viscera, and are known under the name of spasmodic actions; we see or feel these viscera contract or relax themselves, with more or less rapidity or slowness, in the form of palpitations, constrictions, strangulations, suffocations, greater or less pressure in the interior, compared to the grasp of

the paw of an animal, an iron hand, &c. Then the muscles of the trunk, which are associated with the motions of the splanchnic muscular fibres, and which we have termed cephalo-splanchnic, never fail of acting in unison; 3d, the increased action of the cellular tissues, and the alterations of the secretions are sufficiently indicated in the neuroses of the interior by sensations of heat and cold, by the variations of the colour and temperature of the face, and above all, of the openings of the mucous membranes, variations which always correspond to analogous changes taking place in organs more deeply situated, by the augmentations, diminutions, and alterations of the secretions, which, in a normal state, are discharged from the exterior of the body, as sweat, saliva, urine, semen, the mucus of the openings of mucous membranes; by the gases which are sometimes suddenly evolved in the centre of the hollow organs, as the stomach, the intestines, the uterus, and even the bladder, and by the sudden condensation and reduction into fluids of these same gases, in a state of irritability different from that which gave rise to their formation; finally, by the abnormal expulsion of the products of certain secretories, which are rather appropriate to the process of resorption than to that of excretion. It is evident that we here allude to vomitings of bilious, serous, or mucous matters, and eructations, and other sudden disengagements of gas which are so often observed to take place from the different openings in hysteric, melancholic, or hypochondriac patients of all kinds.

Such is a summary of the phenomena of the active neuroses, both internal and external; we see that those of relation may exist alone, and without complication, but that the visceral cannot occur without complication with the former. There are some which, although referred exclusively to the functions of relations by nosologists, can only be explained by a combination of the two orders of phenomena; such are the vesaniæ which so often accompany hypochondria and hysteria; such also are catalepsy, epilepsy, and apoplexy; but independent of what I have said on this subject when speaking of the cerebral phlegmasiæ, I shall soon be obliged to recur to it; therefore we leave this point to take up that of the passive neuroses, that the connected

view of these different diseases may facilitate the comparison which we must make, and the investigation of the physiological modifications on which they depend.

PROP. CCIII.

The passive neuroses consist in the diminution or abolition of sensibility and of muscular contractility; they cannot therefore be complete except in the locomotive and sensitive apparatuses.

For a nerve to cease to convey sensations, or to cause motion, is a very common phenomenon, and constitutes passive neurosis. But this general fact is not sufficient for the physician who feels the necessity of accounting for what he observes. What is this diminution, or this loss of nervous action? how did it take place? is it direct or indirect, primary or secondary? are all the nervous branches susceptible of it? Such are the questions we are obliged to ask ourselves, not to confound every thing, and to find ourselves reduced to the blindest empiricism.

This diminution of nervous action, which strikes us in passive neurosis, can only be explained by its relations with the various causes which produced it. But the organic causes which are first revealed to us by observation, are the affection of the brain or spinal marrow, and the affection of the paralyzed nerves. Here is already one idea, but it does not carry us far enough. We desire to know in what these affections consist, that is, what physiological phenomena they constitute.

Well, let us again recur to observation, it will teach us that the cerebral and rachidian affections, which occasion paralysis in the muscles of voluntary motion, belong to irritations of the white or gray nervous matter, and in that of the membranes both of the brain or spinal marrow, because the membranes cannot be affected without implicating the pulp; hence, in this first respect, passive neurosis must be arranged as the effect or necessary consequence of all inflammations, properly so called, and of all the irritations which shall have occasioned engorgement, and subsequently extravasation in the brain or spinal marrow.

The same nerves which caused the pain, and determined convulsions in the first grade of irritation of the brain or spinal marrow, and which, consequently, are in a state of active neurosis, will no longer excite either of these phenomena, and will be attacked with passive neurosis, when this same irritation shall have caused a disorganization, a compression, or even a simple engorgement in the tissue affected.

Here is already something satisfactory; the mind dwells with pleasure on the explanation presented to it; it conceives without difficulty that, as the faculty of sensation, and that of directing the regular movements, have their seat in the brain, the integrity of this viscus is necessary to their execution, and that this integrity cannot be injured without their suffering. Very well! but the want of motion is only relative to the will, it is not absolute, and other agents than this faculty may determine an action in muscles paralyzed by a cerebral or spinal affection. This may be verified by causing the stimulus of electricity to reach the nerves of a paralyzed limb.

Moreover, the same proof is often afforded by the disease itself. The cerebral or rachidian irritation, which has produced the engorgement or effusion on which the paralysis depends, sometimes acquires an additional degree of intensity in the circumference, or even in the centre of the affected region: then if this region is not disorganized, if the paralyzed nerves are still in communication by some of their fibres, with a part of the focus of cerebral or spinal irritation, this is propagated to their extremities; and these nerves, which for a long time past determined no movement, and transmitted no sensation, now excite convulsions, or more or less painful convulsive shocks in muscles hitherto insensible and motionless. It is in this way also that the contraction of limbs, which had been previously struck with paralysis, would appear to be produced; the will has nothing to do with it.

We observe, in the same cerebral irritation, that the external nerves which correspond to the super-irritated cerebral substance, may successively pass from the acute to the passive state, then return to the first, and again revert to the second.

There is, however, a limit to the reäppearance of sensation

and motion in paralyzed parts; this is, when their nerves have remained for several years without receiving any kind of excitation, either from the brain or elsewhere. This long inertia induces in them, as well as their muscles, a degree of atrophy which renders them incapable of all action. Thus, the passive state, which at first was only relative in these kinds of neuroses, finally becomes absolute; and, as the nerves are the conductors of all the excitations, that of the vessels of the part becomes weaker and weaker, and the atrophy finally invades all the tissues which compose it. The small number of nerves given off from the great sympathetic which accompany the arteries to the capillary tissues of the part, are not sufficient to prevent this atrophy; for such is the organization of the locomotive apparatuses, that the principal source of the excitation which nourishes them comes from the nerves of relation, and not from those of the great sympathetic.

It has been thought to be proved that certain nerves are destined to motion, whilst others only serve for sensation, or rather that each pair of nerves has two sorts of fibres, which are inserted in different places, either of the brain or the spinal marrow, and some of which are for motion and others for sensation. This discovery, which I admit without hesitation, changes nothing in the theory just given. It only explains why sensation and motion may be affected separately in the same part; but we already possess an analogous fact in the neuroses of the organs of sense, and all the world have given the same explanation of it; no one is ignorant that the sight and motions of the eyes, taste, and the movements of the tongue, are in certain cases separately affected, only because the nerves of the senses are different from those of muscular motion. The same disposition was already more than probable, from these facts, in the general sense of touch. Whenever the organ of sense is near that of motion, nothing is more simple than to enclose the nerves of both in the same envelope, and this is what nature has done throughout the whole extent of the vertebral column, where the posterior roots are for sensation, and the anterior for motion.

But what bearing have these differences on the physiological doctrine? do they establish any thing except that the nerves are

tissues designed to transmit the stimulation of one part of the body to others? do they erect the sensitive nervous fibres, and the nervous fibres for motion into particular powers, independent of each other, and both together independent of the encephalic apparatus? What functions has a nerve of sensation unconnected with the brain? not more than a nerve of motion. Its powers are confined to developing in the tissue to which it is circumscribed some feeble stimulations which it receives by its anastomoses with other nerves, and which cannot give rise to perceptions, nor cause regular movements. The few confused perceptions which its slight communication with the nervous centre may permit, and the irregular and purely local motions which may also exist in some cases, soon disappear, and the part gradually sinks into a state of atrophy.

As to the cases where a limb paralyzed from a cerebral cause, still preserves its faculty of sensation, they only prove that the part of the brain in which the nervous fibres destined for sensation are inserted, is not diseased, notwithstanding the vicinity of the affected spot; that is, that the focus of cerebral irritation is not as extensive as it might have been, and in fact is, in most instances. None of these facts can establish either the isolation of several faculties of sensation or motion, or their limitation to certain pairs of nerves, or some nervous fibres. This mode of explanation is superficial and ontological. But, as we have refuted it in our treatise on Physiology, it is unnecessary to revert to it.

After the affection of the brain and spinal marrow, comes that of the nerves themselves, considered as the cause of passive neurosis. There can be no doubt, but that a nervous trunk of a large size, of a plexus of cerebro-rachidian nerves, may be attacked with true inflammation. The great sciatic and axillary and brachial nerves present pretty frequent examples of this. We will even add here, as this is the proper place to say it, that more attention should be paid as respects etiology, to the neurilema than to the nervous substance, properly speaking, as this is generally affected in a secondary manner only. In fact, the neurilema of the large nerves receives a rheumatic irritation under the influence of cold, as a gelatinous tissue approaching in

organization to the aponeuroses, the ligaments, and somewhat to the serous membranes, and often at the same time as the other gelatinous tissues which surround or are near it. Doubtless many other causes may transmit the irritation to it; it sometimes is affected after the suppression of some habitual evacuation, whether sanguineous or purulent; at others also, mediate or immediate stimulations, contusions, the pressure of a displaced bone, ligatures, lacerations, punctures, or pressure on some of its cords, develope inflammation in the trunk itself; but the most common cause, especially of sciatic neuralgias, is incontestibly the impression of cold, and the formation of this disease is simultaneous with that of the rheumatic irritation.

At the same time, whatever may be the cause of the active state of neuroses of the great nervous trunks, it is not this state which we are now examining. The subject under consideration is the consequences of a neuritis, which, in destroying the nerve of a limb in a circumscribed spot, has produced a solution of continuity there, which interrupts all communication between the brain and the rest of the nerve. But the consequences in question are analogous, with the exception of a few symptoms, to those which would result from a ligature, a compression or division of the nerve; they are paralysis of the limb, and subsequently withering and atrophy. Here gangrenous inflammation is possible, because the inflammation which disorganizes the trunk or the plexus, is more or less propagated along its cords, and even often penetrates to the cutaneous capillary vessels. Violent contusions, not merely of the nerve itself through the cutaneous envelope, but of the whole limb, in falls and violent concussions, may be followed by immediate paralysis, a sort of passive neurosis, which, though depending on one of the most active causes, is not consecutive to inflammation. The nervous system is susceptible of certain sudden commotions, which immediately paralyze it, independent of any inflammatory action. This modification is that of the nervous substance itself; hence it is more frequent in the brain and spinal marrow, than in the nerves. Of the causes which may produce it, an electric shock is the most powerful. Violent moral affections, especially those of sorrow and pain, also produce analogous effects, but rather by

acting on the brain, than on the nerves of the extremities, which are affected only secondarily, so that this paralysis is more cerebral than nervous. There are cases where these paralyses are the consequence of a real effusion. But there are also instances in which the disorganization, the parent of the paralysis, only exists in the invisible molecules of the medullary substance of the encephalon.

The stoppage of the circulation is classed, as every one knows, among the causes which may determine the paralysis of an extremity; but then the principal disease belongs to the circulatory apparatus. In fact, the irritation of the arteries of a limb, whether local and accidental, or transmitted from the heart and more or less diffused, denaturalizes the vessels, obliterates them, is sometimes communicated to the veins, and may occasion incurable paralysis. But when the nerves which run the same course as the vessels participate in the inflammation, there is always horrible pain and gangrenous inflammation, termed spontaneous gangrene, from its internal or senile cause, which precedes the paralysis, or precludes it by destroying the individual. The action of cold on an extremity, is also sometimes sufficient to paralyze its motions; but in most cases this paralysis is rheumatic.

By rheumatic paralysis, we mean that which succeeds to protracted pains caused by cold. They are preceded and accompanied with an engorgement of the fibrous, aponeurotic, tendinous, and even cellular tissues of the diseased limb, and sometimes with a fatty degeneration, with disappearance of the muscular tissue, the fibrine of which appears to have been resorbed. Although the nerves of an atrophied extremity participate in this organic alteration, as is proved by the albuminous and gelatinous exudations, the thickening and ossifications observed there, this disease should not always be classed with the neuroses. It is certain that cold may primarily and principally affect the nerves of the muscles of locomotion, that it may occasion in them sometimes a neuralgic state, resulting from the phlegmasia of the neurilema, and sometimes an immobility resembling paralysis, either immediately or consecutively.

We have already spoken of these neuralgias from cold, a sort of active neuroses which we have observed in the face and in the

limbs, over which we have often triumphed, when they were recent, by local bleeding, topical emollients, and narcotics, and we have pointed out how they degenerate into passive neuroses; but this does not prevent our also admitting of local paralysis consecutive to chronic rheumatism, that is, to a sub-inflammation which has produced engorgement and degeneration of the fibrous, cellular, and sometimes lymphatic tissues of the affected limb.

We have seen paralysis of one arm in nurses who were exhausted by lactation; but the autopsy having taught nothing respecting the organic cause of this passive neurosis, we can only speak of it as connecting these facts to those of the same kind already observed, and which leave us the same thing to wish for. Pains, and subsequently real paralyses of the limbs, frequently arise, from the influence of chronic phlegmasiæ of the thoracic and abdominal viscera. Nothing is more common than these kinds of neuroses, and nothing on which common practitioners commit so many errors. Almost all those who are affected with chronic pleurisies, irritations of the heart, old affections of the spleen, the liver, the gall-bladder, the kidneys, and the ovaries; a great number of persons afflicted with gastritis and enteritis or chronic colitis, either alone or accompanied with the above-mentioned affections, have pains in the muscles of locomotion, especially in those of the limbs, and some attacks of paralysis, which may become permanent. These persons attribute the diseases in question to their rheumatism, and the physicians who have been consulted, are the more induced to believe it, as when the pain predominates in the muscular nerves, it diminishes, or even totally disappears in the viscera simultaneously affected.

Whoever is desirous of understanding these pains, and the consequences which they may induce, should pay attention to the primary laws of the organization, and to what are termed the vital properties. It is more than evident, that the pains, that is, the painful sensations, can only be located in the brain; there is then nothing to observe in the nerves which communicate with this viscus, except the organic motions, of which sensation is the result, and these motions are referrible to irritation; it is this species that we have called *nervous*, in order to distinguish from

the *inflammatory* or *sub-inflammatory*. It is placed between these two species and the brain, which, without it, could not enjoy perception. But, to speak plainly, the inflammatory or sub-inflammatory irritation, existing in the vascular extremities of any organ, in the variously-disposed tissues, which act as their bond of union, and in the nervous matter which is found disseminated there, it must necessarily be also developed in the nervous cords communicating with this matter; this new irritation must be transmitted to the brain, and this viscus must enjoy conditions fitted for perception, for the phenomenon of pain to be super-added to those of the organic irritation, which constitute inflammation or sub-inflammation. But this propagation of irritation from the nervous matter of a focus to the nervous cords which communicate with it, has a constant tendency to take place, and does so uninterruptedly, even during the time when *the self* is not modified in that mode, which causes an individual to exclaim, *I suffer.**

The first consequence that results from this theory, or rather from this general fact of pathological physiology is, that all the nerves in the vicinity of an inflammatory or sub-inflammatory focus, are perpetually in a state of irritation.

By *nerves in the vicinity*, we not only mean those of the diseased organ which surround the focus, but we also wish to designate, in cases where the focus is in a viscus, the nerves of sensation and locomotion, which communicate by the splanchnic filaments with those of the viscera, since experience proves that they are often painful and irritated to such a degree as to provoke violent convulsions in the muscular fibres to which they are distributed, and to alter the secretion of the adjoining glandular tissue, to which they may have furnished some filaments. Nevertheless, such an irritation tends to develope these nerves, to cause hypertrophy in them, and to form small foci of inflammation or sub-inflammation. It is constantly inducing these, even when it causes no pain; and when it has greatly exalted their

* Although it requires a propagation of irritation to the brain to produce sensation, sensation is not the necessary result of every transmission of irritation to the brain.

organic movements, these sometimes attract the attention so forcibly, that the visceral focus of inflammation is lost sight of, and a revulsion, or even a real cure, appears to have taken place. This metastasis is the more easy and frequent, as these nerves are often more developed than those of the diseased viscus, and correspond more directly with the brain than they do.

There are cases, we know, where the chronic inflammation of a viscus occasions more unpleasant sensations in the splanchnic apparatus than in the external parts. This is sometimes observed in the neuropathic state, already spoken of, and to which we shall soon be obliged to revert. Why these differences between cases apparently of the same species? Perhaps it will some day be possible to reply to this question; we can, however, at present say, that the sympathetic pains and paralyses of limbs may recognise the same cause as the neuropathia, with predominance of sensations in the viscera; that these two orders of phenomena, even when they are dependant on the same visceral phlegmasiæ, sometimes alternately replace each other, the irritation extending at one time more to the nerves of the exterior, and at another more to those of the interior; finally, that there are circumstances where they complicate each other and are kept up simultaneously, with this difference, that one is more marked than the other, and most strongly attracts the attention of patients and physicians.

Whoever will attentively examine these facts, which nature unfortunately never fails to present, will soon comprehend why the proposition on which we are commenting, states that paralysis can only be complete in the apparatuses of locomotion and sensation. In fact, the excess of irritation, even when sympathetic, may readily destroy innervation, or the aptitude to innervation, in the nerves of the senses, as well as in those of the voluntary muscles; but this excess would not produce the same effect in the nerves which depend on the great sympathetic. We have already stated, that there is no paralysis in the respiratory muscles which we have designated by the title of cephalo-splanchnic, in order to point out their uses more definitely; we can only verify there a state of immobility depending on the affection of the subjacent viscera; such as that observed in the intercostal muscles corresponding to inflamed regions of the

pleura or lungs. If these regions get well, the arrested motions of the muscles are reëstablished; they have only been suspended; if, on the contrary, they remain a prey to chronic inflammation, the muscles will remain constantly immoveable, and be affected with a real atrophy, similar to that of really paralysed voluntary muscles. The adjacent bones will even participate in the vice of nutrition; they will become light and fragile, as may be observed daily in patients affected with phthisis or empyema. The diaphragm and abdominal muscles are exposed to the same kind of immobility, the duration of which is only subordinate to that of the visceral irritation which has caused it.

If those muscles of the exterior, which are partly voluntary and involuntary, or rather primarily and fundamentally involuntary, transiently and accidentally voluntary, are freed from a state of paralysis, it can only depend on their intimate connexion with the viscera; they are all either respiratory, or aid in the processes of ingestion and excretion; if they become paralyzed, death would arise from them, and not from the viscera, a fact which has never been observed except in experiments. But if they are connected with the viscera, this can only depend on their multiplied communications with the great sympathetic nerve; and if such is the cause of the impossibility of their becoming paralyzed, it is indisputable that the muscular fibres of the viscera, on which this same nerve exercises still more influence, cannot be affected with paralysis. It is in vain that it may be objected to this, that the eighth pair, which is a cerebral nerve, presides over the movements of the muscular coats of the hollow viscera; we would reply, that if the intercostal nerves, although arising from the spine, that is, from the brain, do not permit their muscles to become paralyzed, for the sole reason that they have frequent communications with the great sympathetic, that of the eighth pair must in like manner prevent paralysis in any of the regions where it has multiplied relations with this same nerve; and, in fact, experience proves that paralysis is not possible except in spots where the eighth pair predominates, alone, or in conjunction with other nerves, over the cords arising from the great sympathetic, that is to say, in the larynx, in the pharynx, and in openings furnished with sphincters.

As to viscera deeply seated in the cavities, they are necessarily exempt from paralysis. But to account more clearly for such a privilege, a distinction must be established between them; some have muscular fibres, and others are unprovided with them; those which possess them, as the heart, the digestive canal, the gall-bladder, and the uterus, are not capable of the paralytic state; these viscera may, it is true, experience a diminution of their irritability which may retard their actions, but unless they become so much disorganized that death will soon take place, we can generally dissipate this inertia by means of stimulants, even when it results from a very long deprivation of stimulation. If we are unable in all cases to restore by this means all the energy to the organs of which they are susceptible, at least we can afford them enough to convince ourselves that they are not attacked with a real paralysis.

But, we do not fear to repeat, that the most common cause of the diminution or suspension of the movements of muscular fibres of the hollow viscera which have a membrane of relation, is irritation; and it is because this irritation, increasing their contractility in too great a degree in certain points, has produced the state termed spasmodic, that the other portions appear to us to be deprived of their contractile power; what undeniably proves this is, that by dissipating this spasm by antiphlogistics, we see the contractile action reëstablish itself, and regain its former activity, without the aid of any stimulant whose action transcends the habitual measure. Irritation has not less to do with the momentary suspensions of the motions of the heart; it is not foreign to inertia of the uterus, as is frequently proved by the success of blood-letting to facilitate labour. There are also many cases where the inertia of the hollow viscera is solely dependant on the pain which their contraction causes to an adjoining organ, the sensibility of which is augmented by inflammation. Such are the constipations which depend on phlegmasiæ of the margin of the anus, on those of the uterus, on peritonitis, on nephritis, &c. But as we are not here treating on visceral neuroses, I will say no more, being content with having called the attention of those who are capable of observation, to the means of verifying the impossibility of passive neuroses in the muscular viscera.

As to those which are not so, we do not think that a paralytic state of the vessels and more or less retractile cellular fibres which compose them will be admitted. But this question appertaining to that of general organic contractility, this is not the place to enter upon it.

PROP. CCIV.

The active and passive neuroses are most frequently caused by a phlegmasia in the cerebral apparatus or in the other viscera; the passive depend sometimes on a sedative influence acting on the nerves in which they appear.

One of the most important questions of physiological medicine, is that inflammations may be the most frequent causes of active and passive neuroses. Chaos existed in the theory of the neuroses, when the new doctrine arose to restore order to it. Nothing is more vague than the idea of nervousness in the minds of most medical men, even at the present time, in spite of all that has been physiologically said on this subject. Nevertheless, examine the meaning of those who tell you "there is something nervous in this disease," and you will find that they only use this fortunate expression to authorize them to employ stimulants of a certain description, finding that other means have not succeeded with them. This being premised, to elucidate the question, it is only necessary to show them, that in a majority of the cases, the curative indications are afforded by the presence of determinate points of inflammation, which require very different applications than the nervines and antispasmodics of our materia medica's. It will suffice for this, to recal to them what has been said, in order that they may be prepared to understand the state of the case.

The enumeration which we have given of the causes which usually induce active neurosis in the domain of relation, has proved that in most instances, they depend on an inflammation of the brain, of the spine, or of a nerve of sensation or motion. We have seen, that the same inflammation which produced and kept up active neurosis, give rise to passive neurosis as soon

as it had occasioned the disorganization of the inflamed part, and even that in certain parts, congestion and compression sufficed to afford the same result. It is therefore certain, that passive as well as active neurosis may be and is most generally the effect of phlegmasiæ in the apparatus of relation. It now remains to verify, if the same takes place with the visceral neuroses. The proposition states this fact, and we in the preceding commentary have already collected some data which tend to establish it. But this is not enough, the two following propositions will enable us to complete what we now have to say on the subject.

PROP. CCV.

In the fixed active neurosis of the apparatus of relation, the capillary circulation is excited, and there is congestion in it; inflammation and sub-inflammation exist or threaten to form in the tissues in which the neurosis manifests itself, as well as in the point of the cerebral apparatus to which the nerves of these tissues correspond; whilst the intermediate nervous cords are limited in their operation to the transmission of the sympathetic influences from one point to the other.

To understand this proposition, reference must be had to the moment when the causes of active neuroses of relation begin to act, or at least to the epoch, when they have not as yet produced inflammation of the brain, of the spinal marrow, or of the neurilema of the great nerves, an inflammation which we have heretofore adduced as the cause which most commonly keeps up the neuroses in question. But if at these epochs we observe the irritation which induces the phenomena of pain and convulsions, we might verify the truth of what is advanced in the proposition, and explain the physiological formation of these inflammations which perpetuate the neurosis. We are here obliged to leave general assertions to bring forward the facts themselves.

Let us assume as the cause of neurosis of relation, a painful emotion, for example, the sudden death of a person that was dear;

acting on an individual whose system is in a state of equilibrium. This equilibrium is immediately deranged; a vivid sensation is experienced in the heart and epigastric centre; the person loses all consciousness, falls, and violent convulsive shocks are manifested in the muscles of respiration and those of the limbs. She returns to herself; but remains subject to fixed and active neurosis of relation; this is a hemicrania with facial neuralgia, in the paroxysms of which there is cephalalgia, convulsions in the muscles of one eye, with lancinating pains, discharge of tears and injection of the conjunctiva.

What took place at first, and what is still taking place in this patient? The first perturbating stimulation transmitted by the external senses was exercised on the tissue of the brain; it was too violent to remain there, it was reflected by the nerves of relation to all parts where these nerves are distributed. Let us pass over the first moments, when the whole nervous apparatus was super-excited, and let us see what now remains of the super-excitation. It is to be found in the brain, as the paroxysms commence with heat and pain in the head; but there is no doubt, that it is strongest towards the base of the cranium, where the nerves designed for the motions of the eyes are inserted, it also exists in these organs, for we also observe convulsive motions, redness, and an augmentation of secretion in these organs. This is also the moment to verify the identity of the excitation which presides over the muscular movements, with that which invites the blood to the capillary tissues, in producing a sensation of heat, and with that which presides over secretion and excretion. Is it not clear that the ocular nerves are here the agents of all these phenomena? Can it be denied also, that they conduct on the one part, irritation from the brain to the tissue of the eye to excite the convulsions and capillary injection, and on the other, irritation from the eye to the brain to give a perception of the pain and convulsive motions? Whether this double current of irritation alternately traverses the same nervous fibres, or fibres cohering, though distinct by their double insertion; whether it may be an electric agent that follows the direction traced by the nervous fibres or a different principle, but having affinity to it, all this makes no radical change; as the phenomena of life are exalted in a pathological

manner, and there is irritation. This irritation is primarily nervous; it preserves this character; it constitutes a real active neurosis of relation, as is indicated in the proposition. Let us now see how inflammation becomes added to it.

We have remarked two principal points of organic irritation, one in the brain, the other in the capillary tissues of the conjunctiva and lachrymal gland; well, this double irritation receiving an additional degree of excitement, may be converted into a phlegmasia. The ocular congestion may, in the paroxysm, be changed into ophthalmia; the cerebral congestion may assume the character of an encephalitis, the consequences of which will be delirium, furor, and convulsions; if it is acute, stupor, paralysis, or apoplexy, &c. if it has a chronic march; and dissection will finally testify this conversion by showing the alterations which are the usual traces of the phlegmasiæ.

It is thus that the two principal assertions in Prop. CCV, are supported: 1st, that there is a congestion tending to inflammation, (morbid vital erection,) on the one part, in the brain, especially at the point corresponding to the nerves which are the seat of the neurosis; on the other, in the external tissue where the principal phenomena of the neurosis manifest themselves. 2d. That the intermediate nerves limit themselves to transmitting the irritation; but we ought to add here, that most generally there is only one of the two principal points of irritation which contracts the inflammatory state. But sometimes this point is the brain or its dependencies, and sometimes the external tissue on which the irritation has been reflected. Inflammations of the brain or spinal marrow induced by moral affections, those of the muscles, convulsed from these causes or from any other, and those of the external sensitive nervous expansions, suddenly developed by various kinds of stimulation, permit no doubt of the truth of this fact. It is thus that anatomists sometimes discover pus in muscles which have been violently convulsed, and that practitioners meet with ophthalmias, opacity of the crystalline, violent tetters, and very inflammatory erysipelas, which are suddenly formed during a fit of anger or after a paroxysm of hemicrania. We know that hæmorrhage may arise under such influences, which still more confirms the possibility of the conversion of nervous

irritations into vascular irritations. We also see violent pains of a limb, from metastasis of a point of morbid irritation, or cessation of a discharge, converted into vast and rapid phlegmasiæ. These facts are abundant in practice.

PROP. CCVI.

When in the neuroses of the viscera of the chest and abdomen, there are pains or wandering convulsions in the locomotive muscles, there are two points of irritation which are inflamed or have a tendency to inflammation, the one in the viscera, the other in the encephalic apparatus.

We have taken as an example of the generation of inflammation by neurosis, the tissues which are destined for the phenomena of relation, and nevertheless we have seen considerable modifications there in the phenomena of organic life; the capillary circulation, calorification, and nutrition have been disordered in the brain and in the external tissues; this has been occasioned by the irritation, and from this latter the phlegmasia resulted. It will not then be difficult to understand how the cerebral neurosis will produce inflammations in the viscera, and how the irritations of these latter, reäcting on the brain, will develope in their turn, points of inflammatory irritation there.

In fact, when we accounted for the first effects of mental excitation on the brain, we spoke of painful sensations referred either to the heart or the epigastric region. But the sensations induced by the innervation of the brain, which had been super-excited by the mental affection, are a proof that the nerves of the viscera were then super-excited. But should we not now ask ourselves in what nerves this super-excitation resided, and if it can be foreign to the circulatory or secretory capillary tissues, that is, to the phenomena of the organic life of Bichat?

The stimulation arising from the brain has travelled by the nervous fibres of the eighth pair; or, in other words, if it be

wished, by those destined for sensation. It is not less true, as we are about to show, that it cannot fail to excite actions.

Arrived in the extremities of the pneumogastric nerve, the moral stimulation, that is, of moral origin, whatever it may be, for we must here contemplate the phenomenon in its greatest latitude, must follow all the branches of this nerve. There are some of these branches which inosculate with those of the great sympathetic; but there are others which go directly to the viscera; the stimulation reaches then at the same time, the capillary, circulatory, secretory, and excretory tissues of the viscera, and the visceral and respiratory muscles.

Reflected towards the brain immediately after its arrival by appropriate nervous fibres, the stimulation does not give a consciousness of all that passes in the viscera; at first it only gives a perception of three orders of phenomena: 1st, excitation of the sentient extremities of the pneumogastric nerve by an ill-defined pain, and so different from those which arise from the sentient extremities of the other cerebral nerves, that we are forced to admit of a modification arising from the great sympathetic; 2d, a not less prompt excitation of the muscular fibres of those viscera which are furnished with them; it is known that excitation of the heart is manifested by constriction and palpitations, of which suffocation is the consequence; that of the stomach by vomiting, when the moral affection is of a nature to produce it, as disgust of food; that of the bladder and rectum by the discharge of the contents of these muscular reservoirs; 3d, finally, the last phenomenon of which the stimulation of the viscera reflected on the brain gives a consciousness, is the modification of the respiratory muscles, which becomes evident by sighs and sobs, or only by a state of constriction which seems to arrest their motions. It is true that this influence is most generally the effect of the visceral sensation caused by the moral affection, or of the change of action which it has produced in the viscera, but it always belongs to the class of phenomena which can be attested by the conscience in the case in question.

Besides the phenomena which the conscience gives a perception of to an individual affected with a moral sensation which has produced neurosis, others take place in the viscera, which

may be perceived by an attentive observer; the internal secretions are altered; extravasations of blood take place in the visceral cavities; a heat perceptible to the touch is developed there; pulsations are felt there, and pressure or percussion discover engorgements there which definitively prove the existence of inflammation; it may be acute or chronic, but it is particularly in the latter form that it now interests us; for thus existing, it constitutes a point of permanent irritation, which keeps up the nervous phenomena, of which at first it was the effect.

It is thus that modifications primarily nervous, such as the moral affections, may become causes of inflammations in the viscera, and although we may not have before our eyes the tissues in which they are developed, it is sufficiently demonstrated to us that their mode of formation does not differ from that of external inflammations and sub-inflammations which depend on the same causes, and which were under consideration in the preceding commentary.

It now remains for us to develope another not less established fact, this is, that visceral inflammations, independent of intellectual causes, modify the nervous system so as also to produce a state of neurosis; thus gastritis and nephritis, induced by errors in diet; metritis depending on an immediate stimulation of the uterus; irritative affections of the heart developed under the influence of gastritis, or gouty and rheumatic phlegmasiæ, or directly produced by various kinds of muscular exertion; all these irritations, I say, may cause such an excitation in the nervous apparatus, as to result in neuroses similar to those which are developed by the perturbating action of moral causes.

As to the physiological mode of this production, it is: the irritation primarily developed and fomented in the viscera is propagated to the brain, and causes there vital erections of greater or less intensity, but always subordinate to the organic modification which produces those dependent on moral causes; afterwards these vital erections, from repetition, become habitual and morbid, and reäct irritatingly on the points of visceral irritation which gave them birth.

We again find here another verification of the physiological fact announced in Prop. CCV, and reiterated in the present;

that is, the existence of two principal points of irritation, which are inflamed, or have a tendency to become so, the first in the brain, and the second in some other viscus. In neurosis of a moral origin, or rather from a too vivid perception, the cerebral point is the commencement; the contrary is the case in neurosis from a physical cause; each may alternately predominate in intensity; sometimes the first point approximate nearest to the disorganizing inflammation, at others it is the second, &c. &c. But all these differences, which have such an influence on the form, do not in the least alter the nature of the disease; in all these cases, there are two fundamental points of irritation in which the nervous substance is subjected to an inflammatory modification, and the remainder of the nervous apparatus is only affected secondarily, and as a conductor of the excitation developed in the two principal foci. Whether these foci subsequently become more numerous, whether those which are recent predominate over those of longer standing, from their occurring in a more vital organ, occasions no difference in the nature of the disease; it only changes from the complication that may supervene, or from an acute phlegmasia, if the patient has the materials for it, or from an additional chronic inflammation, which produces a colliquative discharge, as diarrhœa, a purulent destruction of the lungs, or an impediment to the circulation of the blood, which causes dyspnœa, and prevents locomotion, or a dropsy, which results from this impediment, or from the inflammation itself, &c. &c.

We mention all this with the intention of presenting a complete view of the course of neuroses, which all commence by simple lesions of sensation and motion, and terminate, if their progress has not been arrested, by disorganization of the principal organs of the economy.

It is between this first movement of the still nervous irritation of the two foci already described, and their definitive disorganization which accomplishes the destruction of the individual, that are to be found all the phenomena which constitute the state of neuropathia, those of hypochondriasis, melancholia, and hysteria; finally, all those composing the section of neuroses of the internal functions. The phenomena to be remarked there, may all be reduced to the four following heads: 1st, sensa-

tions: they are of different kinds, (A) felt in the irritated viscus, they vary according to the viscus, the degree of irritation and susceptibility of the patients; as palpitations, more or less extraordinary sensations in the heart, suffocations in the breast, sensation of pinching and twisting with a hot iron, of laceration, compression, and other pains in the stomach, intestines, liver, spleen and kidneys, which are more or less difficult to support;—(B) those felt in the muscles and organs of the senses, which sympathize the most with the irritated viscus; as extremely various pains and local sensibilities, simulating gout, rheumatism, pleurisy, or contusions, and frequently changing place; burning in the eyes and tongue, noise in the ears, &c.;—(C) more or less extraordinary abnormal sensations, real hallucinations, which can only be referred to the irritation of the brain, harassed by irradiations from the suffering organ; thus, one person imagines that his arm is turning, although it may be perfectly quiet; another, that some one has seized him by the hair, to throw him down; some stop and turn round to reply to a voice which they hear calling to them, but these errors last for a moment only. The illusions of sight are rare in the grade under consideration; there must be a close approach to madness, to see, whilst awake, fantastic objects, and to address them. Hence, when neuropathic patients have these sorts of hallucinations, their reason is strongly menaced with derangement.

2d. Various motions of the external muscles, which have more or less of a convulsive character, and are the necessary consequence of the sensations which are felt in the viscera, and the actions which take place there. We shall distribute them in two series: (A) those of the respiratory and cephalo-splanchnic muscles; suspension of respiration during the painful constrictions of the heart, bronchiæ and stomach; as movements inseparable from the nervous cough, vomiting, nausea, &c. in both sexes; sighs, sobs, and bursts of laughter, caused by the internal sensations in hysteric women; movements of gyration, circumduction, elevation and depression of the abdomen, produced by the abdominal muscles in the same persons and in certain cases of chronic enteritis;—(B) those of the muscles which are under the sole dominion of the will in the normal state, that is, those of locomotion; at first they

assume such attitudes as are required by the sensations felt in the viscera, to aid the cephalo-splanchnic muscles; afterwards, in proportion to the progress of the visceral irritation, we find them disposed to be convulsed, notwithstanding the opposition of the will; to experience convulsive shocks which it cannot prevent, and finally, to be affected with the most violent convulsions, when the visceral stimulation has conquered the will and suspended the exercise of the intellectual faculties.

3d. Disorders of the internal functions, called organic, which are; (A) various alterations of the secretions of urine, bile, saliva, mucus, sweat, sebaceous matter, and semen; (B) the formation and destruction of gas in the digestive canal, and sometimes in the uterus, (the acute stage of the phlegmasiæ also presents this in the cellular and sub-mucous tissue, the liver, &c.;) (C) the partial disorders in the circulation, consisting of congestions and extravasations, whence result unequal distributions of the animal heat peculiar to the individual.

4th. Mental lesions; these numerous disorders, the effects of the vice of innervation which causes the different foci of visceral phlegmasiæ, cannot fail to deeply affect the intelligence, for the same kind of organization which renders the individual subject to internal neuroses, deprives him of the faculty of supporting them without suffering. Hence we always observe uneasiness, moroseness, a particular turn of character which makes them take trifles seriously; in these kinds of neuropathic patients, this is, what is termed susceptibility; this vice is not the simple result of the reflection acting on the multiplied painful perceptions with which these patients are tormented; the pain, even when visceral, does not necessarily produce the neuropathic restlessness, but it causes continual irradiations from the diseased viscera, which, without being distinguished and stamped as pain by the *self*, dispose to melancholy, to the exaggeration of evils, to groundless fears, and to all kinds of extravagances. We have said elsewhere, that it appeared to us, that these visceral influences could not occasion the derangements in question, except from a predisposition resulting from the organization and particular development of the brain. This opinion still appears to us the best supported; it is this predisposition which favours

those hullucinations of which we have already spoken, as well as extacies and catalepsy, the first degree of congestive affections of the brain; it is this which paves the way for insanity, which may be determined by an increase of irritation, and which is then but too often the prelude of idiocy, epilepsy, paralysis, and apoplexy, the ultimate termination of all prolonged congestions of the brain.

It is thus, that the cerebral irritations, after having presented themselves in a primary state in the neuroses of relation, now show themselves as consecutive to the visceral affections. It is incontestibly evident, that the cerebro-rachidian apparatus is the bond of union, the indispensable medium between the neuroses of relation and those of the internal functions, and that the first may be simple, whilst the second cannot be supposed except as complicated with the neuroses of relation.

But are there nervous states, independent of these more or less inflammatory local foci of irritation which we have pointed out, both in the brain and spinal marrow, in the nerves which traverse the different organs, or in the viscera which preside over the great functions? Are there vague neuroses, whose seat cannot be assigned; and, on the other hand, is it possible to verify the existence of neuralgia in the cords of the great sympathetic?

Men in general are fond of uncertainty, because they love emotions, and each individual procures them at will from ill-determined ideas; hence the great success among the multitude, of animal magnetism, somnambulism, specifics, amulets and all kinds of quackery. Nothing also is more convenient, nothing is better suited for declamation than the neuroses without a determined seat. In this truly magical expression, ignorance easily finds curative indications to meet all difficult cases, and to indefinitely vary prescriptions. Thus all the accounts of cases have been collected, which were thought most calculated to support the theory of neuroses without any particular seat. The pains and convulsions which frequently change place are cited, affections of the fibrous system are often the cause of them; in this case the extremities of the nerves of the spot are irritated with the aponeurotic cellular tissues, and the adjoining muscular fasciculi are disposed to convulsive tremblings. But, as the irrita-

tion is very often transitory in the fibrous and cellular tissues of the locomotive apparatus, the pain and convulsions which always follow it, must be equally so, and present the appearance of a neurosis without a fixed seat.

Some persons wish to maintain that chronic muscular rheumatism is a neurosis. What we have said in speaking of rheumatic neuralgias, page 358, appears to us to contain all that is true in such an assertion, and for more than twelve years past, we have explained our opinions on this subject in our lectures on the theory and practice of medicine. As to pains of nervous muscular extremities independent of inflammation of the trunks from whence they arise, we believe that the irritation which determines them, and which causes the convulsions of the adjoining muscles, has not its primary seat in these nervous filaments themselves, but rather in the tissues in which these nerves are inserted. It is to dissections that we are indebted for this theory; they have always permitted us to observe, in limbs atrophied by rheumatic pains which condemned them to inaction, the cellular tissues adhering to the aponeuroses and ligaments, infiltrated with a more or less concrete albuminous or gelatinous matter, and sometimes a kind of fatty degeneration with diminution or disappearance of the fibrine of the muscles. They have also shown us a gelatinous or albuminous engorgement of the nervous trunks or of the large branches; but we have never been able to verify the morbid development of the extremities of these nerves at the points where they entered the muscular fibre, independent of affection of the branches or of the adjoining cellules and areolæ.

Irritations of the digestive passages are, with those of the gelatinous tissues of the locomotive apparatus, one of the most common causes of the transitory neuroses. And this particular explains itself, when we reflect on the functions of the assimilating apparatus. In fact, this is often stimulated by the ingestion of food, in an agreeable manner in its superior region, which is the most sympathizing, and a few hours afterwards, the chyme being concentrated, the internal sense of the stomach, exalted by an inflammatory state, becomes painfully affected; the substances which have irritated it, successively pass through the duodenum, which is almost as sensitive as the stomach, and the other regions

of the canal, where the irritation may have created partial foci of phlogosis, true accidental senses, the origin of new sympathies.

But each region of the digestive canal has its particular correspondences with certain external nerves of relation; and moreover, each grade of gastro-intestinal irritation exercises a different influence on the brain, the necessary medium of all the influences exercised on the external nerves; why then should we be astonished to observe variations in the seat of sympathetic pains at different epochs of digestion, and under the influence of the diversified ingesta of which patients affected with chronic gastrites and enterites make use? We have often remarked, in gastro-duodenitis, that the pains predominated sometimes in the right shoulder, sometimes under the scapula of the same side, sometimes behind the clavicle, at others opposite the last true rib, and finally return to the right hypochondrium; and frequently we have been enabled to ascertain to what epochs of digestion, to which regions of the canal in which this function is performed and to what kinds of stimulants these different pains corresponded. Convulsive motions even accompany them in nervous patients, but in cases where the principal points of irritation are situated in the small intestines, the cœcum, the sigmoid flexure of the colon, the rectum, the kidneys, or the ovaries, the sympathies are rather exercised on the muscles of the loins and thighs. How many sciaticas depending on this cause have been treated for rheumatisms or primary neuralgias! How often have these cramps in the thighs, the calf of the leg, the shoulder, the arm, and the dorso-lumbar region, which mutually succeed and replace each other in gastro-enterites exasperated by an irritating treatment been taken for essential nervous affections? Are not the sympathetic phenomena of duodenitis, chronic pleurisy with or without effusion, irritation of the heart and pericardium daily considered as essential diseases? Has not an essential disease under the name of angina pectoris, been made of the pain in the sternum and shoulder which corresponds to chronic carditis? This pain is fixed, I will be told; I have myself seen it moveable, and so variable in its fundamental seat, from the shoulder to the crest of the ilium, that it sometimes passed for rheumatism and sometimes for a purely nervous affection of these regions. But let there be joined to it some

grades of gastro-duodenitis, a common complication in hypertrophies of the heart, the right side being as painful as the left, and one of these two from time to time predominating over its congener, and the confusion of the physician was at its height; the viscera was forgotten, and the affection designated by the title of moveable neurosis, was treated in a manner the least calculated to give a favourable result.

Similar errors are still daily committed, (August, 1827,) by the enemies of physiological medicine, especially when the irritation alternately predominates in different viscera, or in the viscera and the locomotive apparatus. There are cases, for example, where the patients habitually experience pain in the stomach, and are momentarily relieved of it by a paroxysm of hemicrania. In others, it is not by violent hemicranias that the stomach is relieved, but by a slight head-ache. As long as it lasts, the epigastrium gives no perception of any painful sensation, and the stomach fulfils its functions perfectly; if it disappears, the dyspepsia immediately recurs. We often see pains in the stomach and colics replace or alternate with dyspnœa. We have attended some patients in whom palpitations alternated with colic or gastralgia. Cases where painful sensibility of the stomach, duodenum, gall-bladder or liver, with the dyspepsia and flatulence which resulted from them, disappear on the mere occurrence of an attack of gout, are not rare. We have seen others where a like alleviation was induced by pains which followed the track of the sciatic nerve, or only one of its branches, as the saphena, and when this pain disappeared, the visceral disorder never failed to replace it.

Cases of the simultaneous existence of irritation and pain of the viscera among themselves, and of the external parts with these same viscera are not less common than those of the alternations above cited. We see many patients with affections of the gastric passages, in whom the cephalalgia does not take place, until the moment when the digestion is laborious, and the stomach more sensible than common. The heart oftentimes does not palpitate in a morbid manner till the stomach is super-irritated, and the pains of the external parts, in a considerable number of patients, always progress in concert with the gastralgia, which reäppears

at certain epochs of digestion. If we occasionally see, as has been said, colic replace pains in the stomach and apparently appease them, it is still more common to observe the colic manifest itself after an increase of gastric irritation and continue as long as the latter lasts. The convulsive twitchings of the lips and eyelids, and the noises in the ears are more generally in direct proportion to the actual suffering of the gastric passages, than in alternation with it.

Must it be concluded from such numerous variations of the two characteristic phenomena of the nervous state, the pain and convulsive action, that neurosis has no fixed seat, or principal point of action, in all cases spoken of? There is no doubt but that these things take place, but as we have already said, the following is what generally occurs; the primary visceral phlegmasia having sympathetically super-irritated several nerves corresponding with those of the spot which it occupies, sometimes those sympathetically affected are more irritated than those of the focus which influences them, sometimes the contrary is the case, and in certain grades of neuropathia, the irritation of the two diseased points is simultaneously exalted and is equally harassing to the faculty of perception.

It would therefore be committing a great fault to adopt it as a rule, to combat all forms of nervous irritation by specifics; but neither must they be neglected so much as to oppose them by no palliative means, independent of the treatment appropriate to the essential disease. Rational and really physiological medicine teaches this, but there are physicians in France, who, modifying these principles, maintain that the sole seat of some of the neuroses of the internal functions, and especially hysteria, must be placed in the brain, which would not lead them to a very satisfactory treatment. This opinion not having been favourably received, it would be useless to refute it in detail; but it is well to have a just idea of the physiological modifications which constitute what is called the hysteric disease. Nothing is easier, after this, than to judge if those who have placed it among the neuroses of the internal functions have permitted themselves to be guided by prejudice, or by a simple observation of nature.

Hysteria was formerly placed among the neuroses without a

fixed seat, or at least it was supposed that the uterus become moveable, was carried hither and thither in the abdomen and thorax. What in reality takes place, is only a repetition of what we have seen as respects irritations of the other viscera; that of the sexual organ, reäcting on the whole splanchnic apparatus, causes palpitations, tremblings, undulating motions and spasms, which resemble immobility in the pectoral viscera, and in the gastric passages, whose mucous membrane is then often phlogosed, sudden creations of gas producing alarming distentions, which are soon replaced by a painful constriction, the necessary consequence of the condensation of this same gas. As it is certain that the muscles of respiration conform to all the changes which the viscera to which they correspond undergo, the observer is struck with those heaving motions, those gyrations and tetanic immobilities of which we have spoken above; the circulation and respiration suffer from them, which often produces a state of asphyxia, and sometimes even a true apoplexy. But in a majority of cases, instead of the immobility, we see convulsions of the voluntary muscles succeed to the engorgement of the brain, an engorgement which partly results from the perception of the hysteric irritation, which seems to be transmitted upwards by means of the pneumogastric nerve, and partly from the impediment which this irritation opposes to the functions of the heart and lungs.

It is evident what part the brain plays in hysteria; it has a perception through the eighth pair of nerves of an irritation whose seat is manifestly in the uterus and viscera of digestion, which a common nervous apparatus places in unison with this organ; it first reäcts on the muscles of respiration, and afterwards on those of locomotion; it excites these latter, at first moderately, being restrained by the will, but the irritation of the brain and the congestion which it produces, cause a disappearance of this faculty, and then the brain no longer obedient except to the stimulus of the viscera and its own irritation, determines as in epilepsy, the most violent and immoderate convulsions.

Now, if what we have said above on the difference of neurosis of relation and visceral neurosis be recollected; if it be admitted that the latter cannot be conceived except as complicated with

the former, it will be perceived that hysteria is in the same predicament as hypochondriasis, asthma, and stheno-carditis, that it cannot be considered as a neurosis of relation, or a wandering neurosis; and consequently, that those who have classed it among the neuroses of the internal functions have assigned it its true place.

The suppression of the menses at adult age, but especially at the age of puberty, the efforts made by nature to establish this evacuation, which often appears for a moment, and may not return for years, are frequently the cause of the most extraordinary nervous phenomena, both from the forms they assume, and the localities they affect. In such cases we have seen succeed to each other, loquacity and dumbness, blindness, and the greatest quickness of sight, deafness, and most exquisite sense of accords and harmony, stupor, and the most astonishing perspicacity, the most unnatural tastes and attitudes, tetanic rigidity and prolonged syncope, sensibility and insensibility of the same external regions of the body. We see these same persons assume ridiculous attitudes, imitate cats and dogs, and like these animals, conceal themselves in corners and obscure places; we see them leap and run instead of walking, and suddenly fall into a state of complete immobility; others hear and see in certain moments of ecstacy, but cannot testify it, either by speech or signs, the will does not dispose of a single eyelid to serve as an interpreter of the thoughts.

A part of these nervous disorders may equally arise from a violent moral affection during youth, in that age when the irritability is carried to such a height, and the imagination so excitable. It is also the most frequently among young subjects, especially of the female sex, that we observe convulsions and extacies of irritation, similar to those which were so notorious at the tomb of the Abbé Paris. Finally, it is the same persons who present us with examples of magnetic somnambulism, during which the neophytes pretend to enjoy an interior sight, which enables them to distinguish affections of the viscera either in themselves or in those who have been placed in magnetic relation with them, or which gives them the faculty of reading in the dark, either with the ends of their fingers, or by the application of the words to the epigastric region, &c. &c.

We do not confound the too real disorders caused by the absence of the periodical discharge, with what depends on illusion and fanaticism; but we say that the principal seat of all these phenomena is the brain. Sometimes this organ itself appears to be the most affected, as in alterations of the intelligence and senses; sometimes it rather appears to pour out the irritation on the muscular nerves, which it keeps in a state of permanent convulsions, or agitates in many extraordinary modes; but these differences are only those of degree, or those of regions and encephalic nervous fibres where the irritation predominates. Sometimes the reäction of the brain on the visceral nervous apparatus through the medium of the eighth pair, becomes the most marked phenomenon, as is evident from the alarming palpitations, the extraordinary tastes, the long abstinences, or excessive epigastric sensibility, of which examples are afforded by these patients; but at the same time we cannot deny the perpetual influence of the uterus on the encephalic apparatus. It would be very erroneous to represent the womb as foreign to all these disorders, because it no longer furnishes the menstrual blood, and to attribute the singular phenomena we have just detailed to a deviation of this fluid. To explain them by the displacement of the habitual uterine irritation, which has taken another direction in abandoning its former seat, would not remove all the difficulties, for the nervous symptoms in question sometimes take place in young girls in whom the red discharge has not appeared, or in whom there is only a show, to use the vulgar expression. In our opinion a just idea of them cannot be formed except by admitting that there is a perpetual focus of irritation in the uterus, which, acting on that of the brain, will impress on it particular characters which no other influence would be capable of giving to it. Besides, as the viscera composing the remainder of the splanchnic apparatus receive the impulse of the uterus from the community of nerves, or derive it from the brain modified by the uterine irritation; there still remain here, as in all the neuroses of the internal functions, two principal foci more or less approaching to inflammation, one situated in a viscus, and the other in the brain. These neuroses therefore are not more vague than those of which we have already given an exposition.

As to the neuroses, which it is possible to refer to an illusion of a too excitable imagination, such as the convulsions of fanatics, and those sometimes not less real cases which are observed in delicate persons exposed to the manipulations and gesticulations of pretended magnetisers, it is clear that their *primum mobile* is in that portion of the brain which corresponds to the senses, and which presides over the intelligence. The cerebral irritation which induces the convulsions in question, is not more inflammatory at its commencement than that which gives rise to nervous phenomena in young girls who have not menstruated; but as the transports of fanaticism may cause insanity as well as the suppression of the menses, and as the insanity ends in encephalitis, as is now abundantly proved, who would hesitate to arrange these neuroses in the same class as all the others.

A nervous phenomenon still more singular, if it be possible, than the preceding, is that presented by some neuropathic patients, who complain of a fixed pain, in the shoulder for example, and in whom this pain disappears on the hand being placed over it, and flies to some other part, as the knee, whence it can be driven with the same facility, so that it is possible to make it thus traverse almost all points of the periphery of the body. This experiment, which is well authenticated, would tend to make individuals, unacquainted with the science of man, believe, that pain is a species of evil genius, who capriciously torments different regions of the nervous system; but those physicians who love uncertainty, and are repugnant to every effort of attention and comparison, will conclude that this phenomenon is a striking example of neurosis without a fixed seat. As we have had occasion to closely observe many persons afflicted with this strange disease, we cannot partake of this opinion. The patients of whom we speak were all neuropathic, in whom the digestive apparatus, or that of generation, were in a permanent state of super-excitation; they joined to this fundamental irritation a sympathetic irritability of the nerves of the external senses, of those of the muscles and articulations, a tolerably common occurrence in nervous and debilitated persons attacked with chronic gastritis, or any other protracted visceral phlegmasia. We frequently see it in those in whom the whole external surface of the

body is painful on pressure; a disposition which yields if we are enabled to calm the internal irritation. Oftentimes also rheumatic or gouty irritation concurs in augmenting the painful state of the external parts of the body.

It is in this general erethism of the sensitive apparatus, in this disposition to pain in the nervous mantle with which nature has clothed the human species, that the neurosis now under consideration, manifests itself. We will not attempt to determine the proximate cause of the form it assumes; all that we can say on this subject, that is very plausible, is that, as it is impossible for the faculty of perception to feel pain in all the nerves of relation, which are then disposed to cause it, it only refers this pain to one point; but, on the other hand, as the irritation which gives rise to this perception, is not intense, as above all it is not caused by a local congestion, and is only sympathetic, it readily becomes denaturalized by the stimulation induced by the contact of the hand; and it is another region whose nerves are similarly disposed, that calls the attention of the *self* and gives it the idea of pain, and this recurs at each apposition of the hands. Truly, if these pains were not purely sympathetic, if they depended on a somewhat inflammatory congestion, either of the brain, or the nerves where they are perceived, or of the tissues which they vivify, so slight a stimulation could not remove them; or if it modified them, as is sometimes done by the manipulations of the magnetisers, it would be for a short time only.

There are pains produced by different causes, and whose obstinacy sometimes disheartens the practitioner. We wish to say a few words of them here.

In treating above of the manner in which the irritation appears to escape from a visceral focus of inflammation to the nerves of relation which have the closest connexion with it, we pointed out one of the causes of these obstinate pains. It may happen, in fact, notwithstanding the cessation of the visceral affection, that the sensibility remains exalted in some of the muscles of the trunk or of the limbs which at first had been only sympathetically affected, and that an idiopathic neurosis is the result; a kind of transformation which we have verified. These pains appear fixed in the cartilages of the false ribs, or else in the adjoining

muscular fibres; and we have found them obstinate, even when the gastritis or duodenitis on which they depended were perfectly cured. We have equally observed them in the quadratus muscle of the loins, in the sacro-lumbar, in those of the pelvis and thighs, either after intestinal phlegmasiæ, or from those of the kidneys, the ovaries, the bladder, or the neck of the uterus; and we have seen them continue or be reproduced by the slightest stimulation, even when there existed no sign of the focus of irritation which had induced them.

The viscera themselves, when they have been stimulated for a long time, preserve a state of extremely obstinate sensibility, even when the inflammatory state no longer exists, or at least although it may be reduced to a very slight grade, and is very circumscribed. I have now, under my care, several patients who have contracted this excessive sensibility of the whole abdomen and even of the muscles, after having constantly taken purgatives every two or three days for several weeks or months. This vicious exaltation of the sensibility is frequently the result of doses of Leroys's purgative taken in rapid succession. There is often joined to this an extreme mobility of the intestines and of the muscles of the parietes. We have seen all this in hypochondria and hysteria; but I here indicate the cases where this state of pain does not trouble the functions much, does not prevent either assimilation or embonpoint, and causes no inquietude to those who are affected with it.

Imprudent stimulations exercised on the digestive apparatus, with the intention of curing intermittent fevers without regard to the irritability of the internal gastric sense, are also a cause of these exaltations of sensibility in the abdomen, and sometimes in the voluntary muscles. We often have examples of them in the Val-de-Grace, in soldiers who have been treated for these diseases by merciless ontologists, who had no idea of the part which the stomach plays in the midst of the sensitive system.

Every thing produced by irritations of the deeply-situated mucous membranes, or the internal senses, may be occasioned by irritations of the external mucous membranes, whether they themselves constitute the external sense, or simply form part of a complicated sensitive apparatus. Ophthalmias often recurring,

and improperly irritated, communicate a convulsive disposition to the muscles of the eyelids, and even to those of the globe of the eye, which may be prolonged and become idiopathic. The abuse of sialagogues, and of smoking tobacco, produces in nervous persons, a spasmodic and painful state of the muscles of mastication, which I have seen last after the cessation of the cause, as well as that which results from carious teeth, the nerve of which has been exposed to the air, and irritated by more or less caustic applications. Some persons cannot use snuff without feeling pain, or without experiencing convulsive motions in the muscles of the nose, the cheeks, the eyes, or the pharynx; this or any other sternutatory might produce idiopathic neuralgia. The sucking of a very hungry and strong infant often causes terrible pains in the back and scapulas, and which can generally be relieved by discontinuing lactation; but these pains may persist after the abstraction of their cause, and I have collected several examples of it.

The abuse of sexual intercourse, and especially of masturbation, often gives a convulsive disposition and a vicious mobility to the bulbo-cavernous and ischio-cavernous muscular apparatus, which, joined to that of the vesiculæ seminales, renders ejaculation too easy, and constitutes a neurosis, which is often protracted in spite of the most continent conduct. We have also seen the sensibility so exalted in the scrotum, and even in the testicles, from similar excesses, that the patients felt a very disagreeable pruritus there, and the contact of their clothes almost caused convulsions in them. Forced continence in individuals who have been habituated to frequent excretions, may equally develope this acrid burning in the scrotum, with general sensibility of the whole genital apparatus, from the excessive irritability which is acquired by the sensitive papillæ, or if it be preferred, the nervous matter forming part of the mucous tissue, the internal sense of the vesiculæ seminales, in contact with an acrid and concentrated fluid. We have also seen cases where masturbation had occasioned a very inconvenient morbid sensibility to the urethra, which lasted after the removal of the cause.

Blows, falls, and in short, all violent contusions acting on a nerve near the surface, often leave an excessive sensibility there;

and sometimes even give it the faculty, whilst it suffers, of developing convulsive movements in the muscles to which it is distributed; this constitutes a species of neuralgia more painful than convulsive, or *vice versa*, which we sometimes observe in the cubital or cubito-digital nerve, but it is also possible in those cords of the trifacial which may be exposed to contusions or wounds.

We have seen semi-sections and ligatures of nerves give rise to convulsions and neuralgias in adjoining or distant parts, and these neuroses are afterwards reproduced periodically or irregularly, although there is a cessation of the cause which had occasioned them.

Prolonged or repeated stimulations of the skin developes in it a sensibility, which is often not removed for years, and which sometimes is never completely destroyed. We have observed this in persons who had long borne blisters or painful issues, and who obstinately continued to stimulate them. We have made the same remark in individuals on whom sinapisms had been applied to the same part several times and at short intervals. We find persons in the habit of often having recourse to pediluviums to relieve engorgements, in whom this practice occasions such a sensibility of the feet that they cannot support any kind of stimulation there. The abuse of frictions, so common among hypochondriacs, who are in the habit of carrying every prescription too far, often occasions a sensibility in certain regions of the skin, which becomes a real disease.

Cold, that potent cause of neuralgia of the great nervous trunks, also occasions it in the secondary branches, or communicates an increase of sensibility to some filaments, either in the muscles, or around the articulations. When a person has suffered for a long time from these kinds of pains, they reäppear in a slight grade, or the patient feels others of an analogous character in different regions of his body, as soon as he diminishes the thickness of the clothes which he was accustomed to wear; a disposition to painful irritation of the nerves of relation is established, which is awakened by the slightest abstraction of the cutaneous caloric; and we see convulsive twitchings immediately manifest themselves in the muscular fibres where the irritated nerves are

distributed. If it is not in the muscles, and it is an articulation which is affected, the patient feels stiffness, fullness, and crepitus there, which shows that the synovial secretion is altered, such is the great influence of the nerves over the tissues, with which they communicate, whatever may be their nature.

When the sensitive nervous expansions and the muscular cords have thus acquired the habit of irritation, a trifle renews it, then every atmospheric change is felt in the tissues, and even foretold several days in advance. Then also the somewhat active moral affections never fail to awaken the irritation in that point of the nervous apparatus, which is found most disposed to it at the moment, and life becomes extremely burthensome.

Cramps ought not to be forgotten in our enumeration; they are not a neurosis having a fixed and determinate seat, although they often reäppear in the same region.

The disposition to cramps is sometimes so diffused through the voluntary muscles, that as soon as the will exacts a somewhat considerable effort from them, they are found to preserve the contraction they have undergone, and which is always very painful for several minutes.

This neurosis depends as far as we have been able to ascertain, on too violent excitations of various kinds, prolonged loss of sleep, mental exertions, excess in venery, chronic phlegmasiæ of the great viscera, or at least a super-excitation of these viscera, which is always reflected on the brain; on the abuse of white wine, coffee, alcoholic drinks, and spices; on worms and certain poisons, in short, it appears to us, that it may always be referred either to a super-excitation of a visceral focus, or that of the brain, or even to an irritability established in certain muscles by local causes, such as the vicinity to a focus of inflammation, too exciting frictions, too long-continued or too frequently-repeated exertions, &c. but in this case, the cramp is not manifested in other regions of the locomotive apparatus.

The difficulty in all the cases we have designated in this commentary is, to determine which is, and which has been the most irritated point. That which actually gives to this or that part of the nervous system its morbid irritability, does not support any stimulation with impunity; that which has formerly given rise to this ir-

ritability must be attended to, as it readily reassumes the irritation that it has lost. These considerations will be of great service to us in the treatment.

Sometimes it is the brain that is the most irritated point, for its irritation is sufficient to occasion pains, contractions, and convulsions in the most remote muscles; sometimes it is a great viscus, which constantly invites it to cause innervation in a muscular branch; in other cases finally, it is this branch itself which has remained in possession of the irritation which it formerly received through one of these causes. Moreover, when we think it certain that the brain is not primarily affected, we ought never to forget that it is always implicated in pains, and especially in convulsions. When the pain has existed for a long time in a somewhat considerable degree, we are sure that it is irritated, as the perception itself is, physiologically speaking, a stimulation of the encephalic tissue. When the convulsions are continued, or only very readily induced, there is no doubt also that the brain may be too ready to pour out its innervation; another radical vice which points out to us an excessive irritability of this apparatus. Such is the case with those who are subject to chorea and tremblings, which approach more or less to a continued form. There exists in such patients a cerebral irritation, which, if it does not belong to those which lead to suppuration, at least does to those which cause a thickening of the transparent lamellar tissues, render them opaque, coherent between themselves and to the cerebral substance, or isolated by an opaque serosity, which they have exhaled; to those which cause the fibres of the brain to condense themselves by virtue of their contractility, and thus diminish the mass of the brain; to those which sometimes produce induration there, with confusion of the substances and of the lines which traverse them, and sometimes gives rise to a softening there, with various extravasations, forming marbled spots; to those which produce medullary sarcoma, ossification, &c.

What have you said, will exclaim some anatomico-pathologist? You indicate the traces of mental alienation.

I indicate the traces of chronic irritations of the brain and its membranes; it afterwards remains to determine if these irritations

must necessarily produce all the symptoms which authors assign to insanity. I believe at the commencement of the morbid scene, that the encephalic irritations which occasion all these changes of organization, must in fact determine symptoms of insanity with more or less agitation and more or less general delirium, but I also believe that the persons who have been long tormented without delirium, by convulsions, tremblings, and pains in the limbs, and who finally are affected with madness and general paralysis, may present the same pathological phenomena; and I think that then, the irritation, which more violent, would have caused delirium by the excessive activity of the perceptions, has produced the delirium only after having exhausted the force of the intra-cephalic innervation, that is, by the debility of these same perceptions. Doubtless this delirium is very different from the first, at the same time it appears to me that the irritation which would have produced insanity properly speaking, if it had been more active, has for a long time only given rise to these convulsions and pains in the nervous expansion of the locomotive apparatus. It will be asked, if I admit that the same encephalic nervous matter presides over the phenomena of both sensitive and of locomotive innervation. This is not what I say; I content myself with stating, because I believe I have the proofs of it, that the same irritation which exaggerates the muscular movements and the sensibility of relation, may also produce active delirium, or that from excess of thought and delirium from a deficiency of thought and memory, which belong to the dementia of authors. The proximity of the sensitive, intellectual and motive intra-cephalic nervous fibres, is sufficiently great for them to exercise very considerable perturbating influences on each other. I will hereafter dilate on all the minutiæ of these facts, which I here only indicate in a general way.

But what idea must finally be formed of this nervous irritation, the different forms of which we have pointed out? On this subject, we will explain our views openly and briefly, because we have to express an idea the proofs of which have been given at full length in our Physiology, and in every thing that we have written on the nervous diseases. The irritation of the nervous system is in our opinion only too rapid a movement, or rather

movements in the white substance which, according to us, constitutes the nervous matter, *par excellence*. What are these movements? We believe they arise from contractility; we regard them as the alternations of condensation and relaxation. If this idea is found inelegant, we are sorry for it, but we believe that it will be confirmed by the aid of time and of the instruments with which it will assist our incapacity. It is not by an analogy derived from the contractility of fibrine or that of gelatine that we have judged of it, it is from direct observation. We do not think that the movements of each nervous fibre may be different from those of the whole mass of the brain which we see collapse, when it has been raised up by the pulsation of the arteries at the base of the cranium, or by expiration. We cannot imagine, that it may not be in virtue of this force of condensation, that the different regions of the encephalic mass execute those vermicular movements which cause the arachnoidian surfaces to rub against each other. The polish of the arachnoid not only appears to us to be a proof of undulatory motions like those of the intestines and lungs, except in intensity; we are even inclined to believe that this polish and finish of the arachnoid itself are the effects of this same friction. Now, it is this vermicular movement of the mass that we follow into each semi-fluid fibre in particular, and it is there that we see it constitute those nervous vibrations, which have been spoken of so vaguely.

Is this all, will be quickly demanded of us? Alas, no! this is still very far from being the first cause of the phenomenon of innervation. We are of opinion that molecular phenomena take place in the softest and semi-fluid tissues, in which all the movements of the animal organism commence; that is, that combinations are formed there, founded on the vital affinities, on the mode of which we can acquire no precise ideas, because we see only the results of them, and even this is not always possible, and which we have no means of imitating. Now, the part of our solids most allied to a fluid is undeniably the nervous substance; but it is not alone on this primary theatre of the scenes of life, it is associated with molecules brought by the arterial current; with oxygen, perhaps with some other element not less essential, derived from the atmospheric air; and with caloric: we are

unable to say either in what degree the agent which we term electricity may be found there, or whether other imponderable fluids are to be met with there, or whether there exists a fluid peculiar to the nerves, as it is impossible to collect a single drop of it; or how the molecular attractions which we observe in inorganic bodies are modified in the nervous system; or whether the changes which must result as regards the animal matter constituting the nerves. But what can be confidently asserted, is, that changes take place there which return the blood in a very different state from what it was on its arrival, and this leads us, what do I say! forces us to believe that if the deficiency of oxygenation of the blood in the lungs is so promptly fatal to the force of innervation, that this can depend only on a change in the semi-fluid nervous matter in question, which renders it incapable of exciting the organs. This, in our opinion, is the mode of action of gases sufficiently deleterious to occasion death the moment they penetrate the nervous substance of the sensitive expansions; it is in the same manner that we explain the action of hydrocyanic acid, which, when placed on the tongue, suddenly extinguishes life, &c. &c.

If it now be asked how the contractile movements, which we admit in the nervous matter, can serve as an instrument to these molecular modifications, and if it is by the propagation of these movements, or by the progression of an imponderable fluid, that the stimulations advance along the nerves with the rapidity of lightning; if it be insisted that we should explain how the phenomenon of sensation, that of thought, or only that of muscular contraction, are connected to the contractility of albumen, to the affinities of the solids with the fluids, and to the office of imponderable fluids in the nervous substance, we will say, all this is unknown, and it is impossible to solve it.

Let them not think to refute us by alleging that life and the presence of fluids are not necessary to innervation, since the electric shock traverses a nerve separated from the body, and causes contraction in the muscles to which it is distributed. We would reply that life still exists in the amputated limb, and that it is present there as long as the limb is acted on by galvanism or electricity. As to the fluids, we would say that they are also

there, at least in a sufficient quantity to cause the phenomena of innervation which have been obtained; we would likewise add, that this forced and factitious innervation more rapidly exhausts what life there is in these muscles separated from the body, and disposes them to a more rapid putrefaction, by deranging the affinities, which were the work of life, which even constituted them.

If we should here recal to mind all the observations and all the experiments of physicians who have attended to physics, concerning the duration of the irritability after different kinds of death, and medicinal or poisonous agents to which the animal has been subjected, we should find abundant proofs in support of our assertions; we should constantly see that all the modifiers which urge innervation beyond a certain degree, leave the fibre without irritability, and greatly facilitate the disassociating operations of inorganic chemistry.

PROP. CCVII.

Obstacles to the circulation do not derange the functions of the principal viscera unless these obstacles are situated in the heart or large vessels.

The impediments to the circulation of the blood have not been separately considered in any system of nosology. The symptoms which belong to them were confounded with a thousand others, in the diseases in which these obstacles exist. Physicians were on this account thwarted in their diagnosis, and embarrassed in the determination of curative indications.

In distinguishing what depends on the difficulty of the passage of the blood through the tissue of the viscera from that resulting from any other cause, and in referring the symptoms which arise from this difficulty to irritation, the physiological doctrine has caused an advancement in the science. In fact, what is there in common between aneurism of the heart and thickening of its parietes with induration and inaptitude to the systole and diastole; between excessive dilatation of the arterial openings of the heart

and their closure by a vegetation or a polypus; between dilatation of the arch of the aorta and its contraction; between pericarditis, where the heart is compressed by an intra-pericardiac suppuration, and an effusion or a tumour which presses on the pericardium itself, or the great vascular trunks which commence in the heart; between all these diseases and peripneumony or pleurisy; between a paroxysm of asthma and all these affections? What is there in common between all this and a gouty pain which is displaced to mount into the chest, (to use a vulgar expression,) if it is not the difficulty with which the blood traverses the heart and lungs, and satisfies the wants of respiration? Do any means exist of distinguishing at the first glance, and even after a mature examination during life, all these affections from each other, and of clearly ascertaining what disease is to be treated? No, without doubt, it is only after long and laborious gropings, after difficult comparisons, founded on a perfect knowledge of the laws of the economy, and of which but few physicians are susceptible; it is only in consequence of an exact acquaintance with the previous symptoms, which it is very rare to obtain, that we are enabled to *suspect* the cause of the dyspnœa which exists in a majority of the above-mentioned cases. If some are clear, as well-marked hypertrophy, how many others are in a melancholy obscurity, for example, induration, hernia, laceration of the parietes of the heart with formation of a coagulum which prevents the effusion of blood, obliterations of the aorta by the formation of layers of fibrin, &c.? How are these diseases to be nosologically arranged, or rather these groups of symptoms, products of various points of irritation which have been silently developed, increased and multiplied there for a long series of years? Is it wished to class them precisely by analogous groups? These cases always being variously complicated, the analogy is never exact. Is it pretended to characterize them after the plan of the anatomico-pathologists, who aspire to found nosology on the mode of alteration? It will only be accidentally successful once in a thousand times. Moreover, these two methods would not furnish certain indications. There is no other plan to pursue than to observe what is common to all these cases, and to make it the distinctive character of the genus. But what is the common cha-

racter? is it the dyspnœa? It exists in all the cases spoken of, but, as it equally appertains to others, for example, to cerebral compression, to peritonitis, to gastritis, to paroxysms of hysteria, &c. we cannot designate these diseases by the name of dyspnœa. Besides, this expression does not define, in a sufficiently clear manner, the physiological modification which is to be destroyed.

But if we go back to the evident cause of this dyspnœa, to the forced and mechanical stagnation of the blood in the lungs, we possess a phenomenon common to all these cases, and above all, a phenomenon the simple enunciation of which fixes the indication which it is urgent to fulfil. In fact, under all these circumstances we must either detract blood to diminish its stagnation, or invite it towards the surface; we must always moderate the hematosis, and constantly oppose every modification which might hasten the flow of blood towards the spot where there is already too great an accumulation of it. At the head of these modifications undeniably stands muscular exercise; consequently, here are the three first indications on which the preservative, curative, and palliative treatment of obstacles are based; behold them, I say, irrevocably supported by the mere fact of the denomination of the disease. With such data we do not permit a patient disposed to hypertrophy of the heart, but who as yet does not complain of any painful sensation in the left side, to pass through our hands without detracting blood; we do not hasten the progress of an irritation of the same organ, which as yet only causes nervous symptoms, by advising the cold bath and antispasmodics; we foresee the consequences of an incipient gastro-enteritis, and we are not anxious to strengthen a convalescent with a good appetite who retains no other trace of his acute disease than rapid and strong pulsations in the region of the heart.

It may have been remarked, that in giving a general idea of an obstacle to the course of the blood, situated in the centre of the circulation, we have designated several acute diseases, as pneumonia, pleurisy, pericarditis, and gastritis; it was not with the intention of leaving them in this class; they are much better in those of the phlegmasiæ, of which moreover they possess all

the characters. We only leave here the affections which have no place elsewhere, and which are also distinguished by the community of the above-mentioned curative indications. A very attentive examination will sometimes discover the cause of the impediment, but this does not change the radical indication; this perfection of the diagnosis is only an additional proof of the certainty of the prognosis that ought to be drawn.

In all the cases indicated above, the obstacle is in the centre of the circulation, in the most contracted point of the circulatory circle; and it is precisely for this reason, that so many severe symptoms exist, as the difficulty of breathing and that of performing locomotion, with an uneasiness, which appears to be general, and a derangement in the function of assimilation: all the rest is secondary. But the lesion of the three internal fundamental functions, circulation, respiration and nutrition, do not exist simultaneously when the impediment to the course of the blood implicates only a portion of the circulatory system; stagnation of the blood, appreciable by the swelling of the vessels, the colour and turgescence of the part, are all that strike the observer when this part is external. As to obstacles, limited to each viscus in particular, there is a distinction to be made; if they intercept the passage of the blood through the tissue of the heart, they must be referred to general impediments, but if they are wholly confined to a viscus, as the brain, the liver, the spleen, a kidney, or the pancreas, they appertain to the irritations of each organ. Such in general are the ideas contained in Prop. CCVII.

PROP. CCVIII.

In cases of obstacles to the circulation, dropsy occurs from the stagnation of the blood in the venous apparatus, or from inflammation of the sanguineous and lymphatic vascular apparatuses.

It is clear that absorbed fluids must all pass by the venous system. Some reach it by the shortest route, that is to say, they are conducted into the venous radicles, by channels, whose dis-

section has not yet been perfectly made, others do not reach it until after they have traversed the long route of the great lymphatic system, and there being united to the chyle coming from the gastro-intestinal surface. But it is evident, that to perform absorption, the centripetal white and black vessels require an opening into the right auricle of the heart. Hence, whenever the vena cava cannot freely disembarrass itself of the blood it offers to the heart, the whole centripetal system remaining too full, will find it impossible to continue absorption in a regular manner; then the fluids which are left on the serous surfaces and in the areolæ of the cellular tissue, will distend them, by accumulating there, and will produce dropsy. This is exactly what is expressed in the proposition, but it is our duty to give certain explanations of it.

First, it must be remarked, that dropsy is often tardy in its appearance, and that the impediment to the blood, which flows through the two venæ cavæ is, in many persons, apparently carried to an extreme point, without any symptom of dropsy having yet manifested itself. In these cases, which we have studied for a long time, we have never found that the discharge of urine was very copious; it must therefore be taken for granted, that the elimination of the superabundant water is effected by means of cutaneous exhalation; for we do not even observe copious sweats.

Post mortem examinations having often exhibited to us traces of inflammation in the sanguineous vessels, after aneurisms and other organic affections of the heart, we asked ourselves whether phlogosis of the veins would not have some influence on the production of the dropsy, which so often terminates the life of patients. We admit that the facts are not sufficiently numerous to enable us to establish general propositions. Persons who suffer in their circulation, generally die in one of two ways; sometimes they perish suddenly by a violent suspension of the course of the blood, and sometimes after very long sufferings, they become debilitated and sink into a fatal dropsy. We here indicate what most commonly takes place, for very many other chances are possible. We will mention them, but we must here observe, that there are cases of impediments where dropsy is one of the first symptoms, and as

it is then easily and even radically cured by bleeding, followed by proper hygienic precautions, it is probable that inflammation of the veins has nothing to do with it, and that it can only be attributed to plethora of these vessels. But it does not follow from this, that a long continuance of the impediment to the course of the blood would not finally alter the veins and cause a real inflammation in them, or only a sub-inflammation, similar to that of the venous varices of the periphery. It is also possible that this inflammation may descend from the auricle by the vena cava, or that, originating in the left ventricle, that it may reach the veins only after traversing the whole capillary system. Other routes are also possible, for example, the propagation in the branches of the vena porta, of the inflammation which occupies the digestive mucous membrane; finally, to avoid any exclusive idea on the causes and mechanism of this dropsy, it must not be forgotten that those who have long suffered from dyspnœa depending on the impediment to the course of the blood, are necessarily debilitated and relaxed by frequent bleedings, by the abstinence to which their suffocation condemns them, by the want of sleep, and by the imperfect oxygenation of their blood.

PROP. CCIX.

The sudden increase of dyspnœa in aneurism of the heart, produced by locomotion, proves the influence of the muscular apparatus upon the venous circulation.

This proposition is not solely applicable to normal physiology; great advantage may be taken of it in the hygiene of persons who, from their natural or acquired constitution, are in danger of impediments to the course of the blood in the narrowest part of the circulatory circle. In fact, if whenever the muscles are in action, they attract a greater quantity of blood, and force it in a greater proportion into the venous system, as we have proved in our special treatise on Physiology; if this fluid, violently urged towards the heart by a great number of muscles simultaneously in action, exerts a dangerous violence on the vena cava and right

auricle; if the heart is obliged to then hasten its pulsations; if this increased action must only give rise to a hypertrophy which menaces to lead to an aneurismal softening, there can be no doubt that fatiguing exercise must never enter as a preservative or curative measure into the treatment of persons who are in danger of the consequences of an irritation of the heart. Doubtless the physicians who prescribe these exercises have good intentions; they pretend to correct a vicious nervosity by muscular innervation, which they attribute to any other cause than the impediment to the course of the blood; or else they imagine that the disorders of the heart, where they are apparent, are themselves of a nervous nature, and ought to yield to a revulsion on the locomotive apparatus. It is therefore of great importance to omit nothing in treatises on semeiology that can elucidate the progress of affections of the circulatory centre, which may end in an obstacle to the course of the blood; but as this exposition does not exist in any treatise *ex professo* on this subject, since they are all composed according to the humoral, empirical, or ontological doctrines, we assume the obligation of detailing in these commentaries, all that we know of a positive character on this subject, when we shall have examined all the propositions which relate to these diseases.

PROP. CCX.

Inflammatory congestions and the secretions prove the influence of the capillary system upon the circulation of the blood.

The irritation which presides over inflammations, invites the blood to the tissue which it occupies, prevents a great quantity of globules from regaining the veins, in fixing them at first in its focus, and afterwards in the environs. It, however, does not arrest all the blood which is directed towards it by the impulse of the heart; for then every inflammation would terminate by a general obstacle to the circulation; on the contrary, the impulse which it gives to the small arteries in its vicinity, always acting

on this blood, hastens its progression towards the nervous system. But all these changes of the course of the fluids are independent of the impulse of the heart, as long as the inflammation is not sufficiently intense to increase its action; they prove then the influence of the capillary system over the circulation of the blood.

This is also the case with a secretory, which receives and gives out more sanguineous globules when an increase of innervation, independent of the heart, forces it to a greater secretion; such is the liver, stimulated by the passage of chyme in the duodenum, or by a purgative; such are the salivary glands when they feel the stimulation of a sialagogue taken into the mouth. All these local capillary actions being able to derange the regular and monotonous course of the blood through these tissues, must powerfully influence the circulation.

The proposition has stated all these facts as regards obstacles to the course of the blood, in order to present simultaneously to the mind every thing that may exert a beneficial or injurious influence over the dyspnœas which are occasioned by impediments in the circulatory centre, and to show in what way irritation may produce partial obstacles.

PROP. CCXI.

Absorption proves the influence of the capillary system upon the circulation of the non-sanguineous fluids.

Those who will not recognise any other impulsive force than that of the heart in the propulsion of the blood, are at least obliged to admit that this viscus does not exercise any influence on the absorption of chyle in the digestive canal, or of lymph from the cellular serous surfaces, in short, from all the surfaces of the economy. But we have just seen that the heart has nothing to do with the congestions of blood which arise under the influence of local irritations, whether normal or abnormal, in the muscles, in the secretory organs, and in all the foci of inflammation; it is therefore evident, that many centrifugal fluids are withdrawn from the influence of the heart as soon as they have

reached the extremity of the arterial tree, and that other fluids advance towards the heart, with a portion of the preceding, without being propelled by the *vis a tergo* of the heart.

These too long unknown physiological truths must not be here considered as a mere object of curiosity, foreign to the subject under consideration. This influence of irritations of the capillary systems on the centripetal fluids, explains how it is possible for the circulation to continue, in spite of the inertia, the softening, or the rigidity of the heart, become almost motionless; or in spite of impediments situated near the source of the arterial current, and preventing the systole from being felt very far along the aorta. This same influence also shows that the proper action of the excretory and exhalent vessels must greatly retard the appearance of dropsy, by freeing the body from a superfluity of serosity which can no longer be resorbed by the lymphatics and veins. These considerations, joined to a knowledge of the vital laws which retain the fluids in the irritated tissues, must serve to enlighten the practitioner, who seeks for indications in different cases; they may, for example, suggest to him the idea of provoking the auxiliary action of the eliminating organs, without, however, stimulating them to a degree which would expose them to themselves becoming the seat of a partial embarrassment, which would only add to the general embarrassment.

PROP. CCXII.

The uneasiness and anxiety caused by obstructions to the circulation, sooner or later produce gastritis: stimulating remedies accelerate its progress.

In this proposition two things are considered, the uneasiness and agony occasioned by the difficulty of the passage of the blood through the centre of the circulation, and the gastritis which sooner or later results from it. We will treat on each of these two questions in succession.

On what does the uneasiness experienced by persons affected

with a central obstacle to the course of the blood depend? Doubtless there are many causes of it, but we think that the principal is the difficulty with which this fluid is oxygenated. This difficulty itself depends on the blood traversing the lungs too slowly, the renewal of this fluid is not sufficiently prompt in the principal viscera, that is, in the brain and digestive apparatus. In fact, the prompt exchange of sanguineous molecules, which have fulfilled some function, is necessary for the sensation of the ordinary feelings of health to last. If then this exchange is retarded, uneasiness takes place, and if the hindrance continues, agony soon succeeds to it.

What we before said in terminating our discussions on the nervous system, must here be recalled to mind to account for those kinds of pain, which are designated by the vague expressions uneasiness, indisposition, and agony. In this passage we have proved that the continuance of life essentially depends on the molecular combinations which take place in the semi-fluid substance of the nervous system, and of which oxygen, and the principles furnished to the blood by atmospheric air, are, if not the sole, at least the essential materials. We added, that as soon as these materials were deficient in the nervous substance, it lost the conditions which rendered it capable of exciting the play of the functions; that is, the fibres, which are the tangible and visible instruments of these functions; now, it is this fatal change of the semi-fluid substance of the nerves, the imminence of which produces the feeling of indisposition which is now under consideration.

Where is it to be perceived? will be demanded of us; in every spot where the nervous substance is in a state of expansion with the sanguineous matter brought by the arteries, the constant companions of the nerves, that is to say, in all the mucous surfaces and in the brain, which is itself only an immense nervoso-sanguineous expansion. Since all the modifications of the nerves, however slight they may be, are transmitted with the rapidity of lightning, from one part of this system to all the others, we ought not to be surprised that a slowness of oxygenation should diffuse a feeling of indisposition through the economy. Moreover, the cause of this indisposition is simultaneously present in

all the sensitive organs, which are at the same time wearied with old sanguineous molecules, and require new ones from the conservative instinct. If the seat of this instinct be sought, we will say that it is in every part of the nervous system; that is, that the perception of wants is nothing more than the result of a change in this system, to which are conjoined certain movements, the principal of which take place in the brain, and especially in the cerebellum and medulla oblongata. The intellect itself can have no other seat than the *ensemble* of the sensitive apparatus; both the one and the other can only be movements of this apparatus, occasioned by the molecular changes it experiences; and to seriously designate, without speaking metaphorically, the particular seats of each intellectual and instinctive phenomena, or to *isolate*, in the encephalic apparatus, pretended exciters for each organ, is not less ridiculous, than to locate the soul as a material faculty in the pineal gland, or to place it in the nervous matter of the pons varolii. Vivisectors may indeed sometimes wound a fasciculus of nervous fibres in their passage to this or that muscle or organ; but there is a wide, a very wide distance, between this experiment, and the inductions they are willing to draw from it, of a multitude of motive, sensitive, instinctive, and intellectual faculties, independent of each other, and which compose the republic of the brain. If we are not understood at present, we will hereafter make ourselves comprehended.

After this first cause of instinctive indisposition, we shall notice a second, a third, and perhaps we shall find others. But it is first requisite to isolate the first perfectly, and to reduce it to its true value.

If the oxygenation was always very defective in dyspnœas, from an impediment to the course of the blood, the other causes of indisposition would not exist, life could not preserve sufficient energy for them to exist. But the danger is most generally exaggerated by the instinctive conservative sentiment; in other words, when there is a very slight deficit of oxygenation, the *self* originates extreme inquietude in certain nervous patients, in the same way that the slightest irritation of the digestive canal, inspires exaggerated fears in other equally nervous patients,

so that there are hypochondriacs from a defect of oxygenation, as well as from disordered digestion. If it were not so, we should not see so many persons complain of suffocation for a long succession of years, without the brown colour, the diminution of irritability, that of heat, and the other signs of deficient oxygenation ever manifesting themselves. Who does not recognise in these symptoms the marked analogy between an exaggerated asthma and the dyspepsia of a person, who states that he has not digested properly for a whole year, and who feels himself sinking and wasting away, although he has never been seen to reject his food, and has not lost a pound in his weight? Is it not clear that the instinctive feeling exaggerates to these two patients, the disorder of their functions and the danger resulting from them? This proposition being admitted, it will be understood how several other causes of indisposition may be added to our first, which in reality is nothing but the imminence of asphyxia. These causes are irritation of the organs, by the forced stagnation of blood in their tissues, by the forced action of certain secretories, especially the mucous, which, stimulated by this same blood, secrete more than they ought to do, and encumber the surfaces with an ill-elaborated mucosity.

Here then are the two principal causes of indisposition which must closely follow the imminence of suffocation. The first is always present, and we will soon see its effects in the digestive canal; the second is sometimes wanting, its existence depends on the special disposition of the mucous follicles. We shall speak of it also, but we must moreover mention other causes.

Certain sensations are effected by certain modes of stimulation of the viscera. Terror, for example, which suspends the action of the heart, is, at the moment when it produces this effect accompanied with a peculiar feeling, which is perfectly familiar to timid persons. Well! when an irritation from a physical cause retards or tends to suddenly suspend the circulation by prolonging the systole of the heart, the same feeling is reproduced, and the patients have sensations of surprise, and terror and the palpitations which appear to depend on them, independent of moral causes. It is at the same time possible that this sensation does not predicate a primary affection of the heart. All the or-

gans are connected with each other, and as a primary gastritis may suspend the action of inspiration by a spasm of the diaphragm, it may also menace to suspend the pulsations of the heart, by spasmodically prolonging its systole. It requires nothing more to produce the sensation under consideration; hence, hypochondriacs often complain of it. Besides, it is neither impossible, nor even rare, for cardiac-hypochondriasis, if I may be allowed the expression, to be associated with gastro-duodenal hypochondriasis.

The muscles are necessarily connected with the heart by nervous sympathies under the guidance of the instinct; if it were otherwise, there would be a discord between them and this viscus, and under certain moral influences, we should often push exercise too far. But, this sympathy which takes place in persons afflicted with a central obstacle to the course of the blood, obliges them to stop, especially when they first begin to walk. If it depended on the oppression of the chest, nothing more would be observed than the uneasy feeling which we have attributed to the imminence of a dispelled asphyxia; but, at the commencement of the disease, these persons often make no reference to the thoracic region, or at least, if they feel any thing there, it is only after having pushed exercise so far as to produce panting. But, the first advice is given, in the cases we have pointed out, by these muscles themselves, and results in a kind of fatigue and want of power which is referred to the middle of the thighs and to the muscular parts. Patients tell you that they feel as if their limbs were broken, and that they have lost all their strength, and this a long time before they call your attention to the lateral part of the thoracic region. The painful perception referred to the locomotive apparatus is then still an additional proof of the uneasy feeling which embitters the existence of persons in whom the centre of circulation is affected in such a manner as to form an impediment to the course of the blood.

The last of the causes of this uneasy feeling which renders persons thus affected so valetudinary, is the congestion of the blood in the brain. It will perhaps appear to some physicians that this cause ought to be placed first, on account of the importance of the organ; but if they consider that many patients never complain of their head; that among the nu-

merous disorders which may cause the impediment to the course of the blood, that there is hypertrophy of the heart only which can act powerfully on the cerebral apparatus, we think that they will be disposed to adopt our opinion. We have closely investigated the subject, and have remarked that the difficulty of the disgorgement of the superior vena cava into the right auricle, of itself, very seldom produces cerebral symptoms, or produces them only in a very advanced stage of the disease; whilst the violent impulsion given to the blood by a heart whose parietes are doubled in volume and energy, continually menaces the brain with a fatal congestion. Hence this imminence of congestion is characterized by a sensation of weight, vertigo, pulsations at the summit of the head, heat in the face and interior of the cranium, cephalalgia, and hemicrania, symptoms which manifest themselves at times when the pulsations of the heart are full, strong and violent, and often accompanied with a feeling of heat and bubbling in the thorax. Moreover it should be noted that the embarrassment and uneasiness of the brain would not exist simultaneously with the sensation of fatigue and weight in the limbs; another cause to add to the preceding to explain the sum of the evils which overwhelm those unfortunate individuals in whom the circulation is obstructed at its central point. It is clear that there are reasons why asthmatic patients of all kinds are suddenly obliged to stop in using muscular exercise.

The order which we follow now, brings us to the second part of our proposition, that the feeling of uneasiness and agony must always induce gastritis. As facts super-abundantly justify this assertion, which itself is only the expression of them, we have only to seek for the *quomodo* of the production of the gastritis, and this investigation is necessary, since it leads to a knowledge of the means of preventing a complication which is always fatal.

The first cause of the gastritis is, in our view of the subject, the forced stagnation of the blood in the branches of the vena porta. If the vena cava disgorges itself with difficulty into the right auricle, the blood must remain in the liver, and, for the same reason, in the spleen and in the whole venous apparatus of the digestive passages; now, if it be admitted that the blood is the natural stimulus of our organs, it must be comprehended that

all parts of the mucous membrane, where this stagnation is most considerable, are often super-irritated, or at least predisposed to become so. But what is required for their predisposition to have its full effect? Stimulants, will doubtless be the reply. Well! since the necessity for food perpetually exposes the stomach to the action of such agents, we ought not to be astonished to so frequently see an inflammation arise there which complicates the principal disease. During the first years of the existence of the obstacle, whilst it is not very important, although it may sometimes appear so, these gastrites may be acute. We will often meet with the double affection in these febrile diseases of young persons; but at a later period, or after some relapses, they are necessarily chronic, and the duodenum, and in a greater or less degree the superior portion of the small intestines always partake of the irritation.

The second cause of gastritis, from obstacles to the circulation, is the direct stimulation of the stomach. The intervention of this determining cause is, in fact, so powerful, that the impediment to the course of the blood does not produce in a general and uniform manner the redness of the gastro-intestinal mucous membrane, which would never be wanting in the bodies of this description of patients, if the redness of the gastric passages depended on the forced stagnation of the blood alone. We have opened in 1826, since we wrote the commentary on Prop. CLXXVI, several subjects, who had succumbed to organic affections of the heart, and we found in them a confirmation of what has been stated in that commentary. Those who had presented symptoms of gastro-duodenitis, offered a very great sanguineous injection of the stomach, the duodenum, and the superior portion of the jejunum, whilst the arch of the colon, which receives its blood from the same sources, and which is not more distant from the obstacle, was absolutely without redness. One of these subjects had suffered more in the jejunum and ileum than in the stomach; it was these intestines which presented the redness; a fourth having had diarrhœa, had the whole colon engorged with blood; a fifth presented redness of the intestines in isolated patches, which would have been impossible, if the redness of the digestive canal solely depended on the impediment to the course

of the blood, and on the uniform stagnation of this fluid in all the sub-diaphragmatic tissues.

It is from observations of this kind, which constantly reproduced under our eyes, for more than twenty-five years past, that we have been led to conclude, that if authors have constantly found a general injection of all the tissues of the abdomen, after diseases of the heart and large vessels, it is because they have favoured them by their mode of treatment. As they did not think of gastritis, they took no precaution to prevent it. Stimulants were lavishly used, sometimes to facilitate expectoration, sometimes to combat spasms, sometimes to procure sleep, very often with the intention of evacuating serosities, and sometimes even with the view of moderating the too energetic impulsions of the heart, and the constant result of this empirical medication was a gastro-duodenitis, with turgescence of the liver, which only added to the sufferings of the patient, and prepared most terrible death-bed agonies. It is after deaths of this kind, that the sanguineous injection is presented in its highest degree of intensity and general diffusion; but if care has been taken to manage the irritability of the digestive passages, and to combat the gastritis or enteritis at the moment of their appearance; we only find on post mortem examination, traces of irritation, over which we had no controul, but there are always sufficient spaces, free from redness, swelling, and ulceration, to show that these alterations are not the necessary effect of either an obstacle to the course of the blood, or of an inflammation which would be the inevitable effect of it.

It is because the effect of medicines had been confounded with the effect of the disease, that the proposition has made a distinction between them; this was the only means of restoring this latter to its primitive simplicity.

After having terminated all that relates to the propositions which treat of impediments to the course of the blood, we have to fulfil the promise we made, of giving some details on the symptoms which correspond to irritations of the heart and of the blood-vessels of a certain size, the most usual causes of these obstacles. These diseases, generally obscure at their commencement, are always clear in their advanced stage, at least, as obsta-

cles to the course of the blood; but when we shall be acquainted with their anatomical peculiarities, we shall still be reduced to resort to a palliative treatment. It is then to prevent them, or at least to cut them short at their commencement, that the physician must particularly endeavour to accomplish. But to be enabled to undertake this important cure, he should have it in his power to foresee the impediments long before they may be formed; he must distinguish the continued obstacle, which will some day induce death, by the transient impediment, which does not alarm even the patient, in the generality of cases, or which, if it does occasion uneasiness, gives the idea of an entirely different affection.

What we propose to do at this time, takes for granted, that we think that medical works are incomplete on the symptoms of diseases of the circulation, which are as yet but slight. In fact, we find only scattered facts on this subject in the old medical classical writers. Not one of them has endeavoured to connect them, or to establish general rules for their diagnosis. The treatise on diseases of the heart by Senac, and that of Corvisart, have laid the foundation of this part of pathology; but how much do they not leave us to desire as regards physiology? Corvisart himself was ignorant of the part taken by inflammation in impediments to the course of the blood; and every thing that was not an organic derangement appeared to him to be neurosis only. It is not thus that these diseases must be viewed, and, whilst in profiting by the labours of this illustrious teacher, which always serve us as a model in the investigation of the seat of diseases, we shall attempt, without however pretending to exhaust the subject, to fill some blanks which he was obliged to leave. We have treated, and shall again treat of this subject, as occasions present themselves, in the *Annals of Physiological Medicine*, but this does not dispense with our recurring to it at present. On the contrary, it is our duty to collect the scattered data, and to compare and insert them in this work, where it will be more easy to find them, and to make an application of them when wanted.

To fulfil this task with more facility, it appears useful to us to revert to diseases of the heart, considered in their relations with

phlegmasiæ of the arteries. The attention of practitioners cannot, we think, be too earnestly drawn to a fact of established truth and alarming frequency, that the habitual state of palpitation, with a certain degree of hypertrophy of the heart, insensibly causes disorganization of the arterial system, oftentimes even simultaneously with that of the venous, and silently prepares the inevitable destruction of the individual, long before the heart may have arrived at that degree of softening which is the signal of approaching death.

At the same time, these common diseases are difficult to recognise, because the local phenomena are generally very slight, and the sympathetic influences do not strongly attract the attention of practitioners. What influence, in fact, can a chronic arteritis, whose progress is so slow, exercise on the *ensemble* of the functions. It doubtless does exercise some influence, but it is not always easy to perceive it. Every person does not experience fever from arteritis, and the sensation of heat and the uncomfortable pulsations along the course of the arteries, phenomena which generally give evidence of acute arteritis, in persons whose attention is not distracted by other pains, are symptoms which are not complained of by those who suffer in an organ which is more sensible than the arteries. Some patients, in our own knowledge, have very distinctly felt all this in chronic arteritis and phlebitis, but how many others have had no perception of them! It therefore appertains to the perspicacity of the physician to supply what is wanting in these individuals as regards their personal feelings.

The causes of diseases of the heart are, in our opinion, more numerous than they were formerly supposed to be; in fact, besides inheritance, external violence, exertions to carry heavy burdens, rapid running, violent fits of coughing, moral affections and venereal excesses, which are the causes known to all physicians, we must also take into account the arthritic affections already spoken of by some practitioners; eruptive diseases, and a number of acute phlegmasiæ, kinds of causes respecting which investigations have not been sufficiently numerous. It is, besides, very certain, that irritations of the different viscera, especially those of the stomach and uterus, act powerfully upon the heart, and

sometimes appear to be transferred to its tissue. But one of the most powerful agents is the suppression of sanguineous evacuations, to which the constitution had become habituated.

It is of great importance to form a just idea of the manner in which all these causes act. It can now no longer be attributed to a purely mechanical distention; we must absolutely admit of irritation in the first impulse which gives rise to hypertrophy and all other degenerations of the heart. It is true, that in some cases, the agent of the irritation is mechanical; but its action being exerted on a living organ, it can only occasion a lesion of the vital forces in this organ; now it is this lesion which gives rise to all the consecutive diseases, and this lesion is an irritation. Let us suppose that the heart may be compressed by the action of the thorax, or that it may receive a shock from a fall or blow applied to the ribs which are situated over it; it will become irritated. In fact, whether some of its muscular fibres may have been torn, or whether they have only suffered from a forcible extension without solution of continuity; whether its capillaries may have been lacerated so as to give rise to an effusion, or the shock be limited to a simple modification of the nervous matter of the heart; still it happens that the broken equilibrium will not be reëstablished except by means of an organic process which requires rest, or at least the smallest degree of action of the heart compatible with the preservation of life. But it is not easy to obtain this remission of the action of the heart, so necessary to it; the uneasy feeling which accompanies a simple diminution of its action renders it insupportable to most persons. They are desirous of having the sensation of living or to be reänimated. The physician may do what he pleases with his patient, provided he can maintain in him a vivid sensation of his existence, and can keep him free from all pain. If he obstinately persists in leaving him in a state of debility, in that state which is a presage of dissolution to the patient, he is always an unwelcome visitor. Moreover, the physician is not always called in, as he should have been, to afford the first relief, after symptoms which may implicate the heart. Patients then are solicitous, in all cases, for means to reänimate them, and as all stimulations of the surfaces of relation, end in the

heart, the modification it receives is precisely the reverse of that which would be necessary to prevent any consecutive alteration. An internal action takes place in this viscus, which is nothing more than a grade of inflammation, whose intensity is in proportion to the degree of impulsion of the determining cause, accommodated moreover to the peculiar temperament of the organ. The first results are all, or at least the majority of them, symptoms of irritability and local sensibility, which compose the series of neuroses of the heart and lungs; the first local degeneration which results from them is hypertrophy; the second and last, is softening, a certain presage of death, except in a few cases where extraordinary alterations take place.

Of all the above-mentioned causes, those which appear to be the most mechanical, after the preceding, are exertions to raise a heavy burden, fits of coughing, rapid running, pregnancy, tumours in the abdomen which prevent the expansion of the thorax, effusions and foreign bodies which form in the left cavity of the thorax. As, in all these cases, there is a double modification exercised on the heart; 1st, that of the blood, which from not finding a sufficient exit, is forced to remain in its four cavities, which it distends unnaturally, (a mechanical cause;) 2d, the increase of innervation which acts for a long time from the nervous centre on the muscular coat of the heart, (a vital cause;) it will not be found strange that we should apply to this etiology what we have just said on the preceding, and even that we should add one *a fortiori*.

The moral affections and venereal excesses are exclusively vital causes; we can only discover in their primary action, a violent innervation of the brain upon the heart, and extraordinary vital erections which attract the blood into the substance of the heart and give rise to its hypertrophy and degeneration. The resistance offered to the muscular parietes by the blood which accumulates there in anger, and in the venereal orgasm, &c. must be considered as another cause of irritation, but we do not believe it to be the most powerful.

In our opinion, it is the modification of the brain, and the sensation which it occasions in the nervous sub-diaphragmatic apparatus, as well as in the pulmonary and cardiac plexuses, which suspend or at least lessen the action of the heart in terror, in sur-

prise and in the first moment of anger. This sensation also arises from a modification impressed at the same time on the nervous substance forming the internal parietes of the stomach and bronchiæ, and from the capillaries disseminated through this substance; this is proved by the modifications of the mucus of these surfaces, the suspension of the digestive process, the sanguineous exhalations of hæmatemesis and hæmoptysis, the sudden creation of gas, the tickling in the larynx tending to provoke cough, &c. which are observed at the moment when these passions are felt with greatest energy. Let this be as it may, it is whilst these modifications take place and the sensations in questions are felt, that the free dilatation of the heart is prevented, that its state of systole is prolonged, that numerous small pulsations are substituted for one which is full, and it is, at least in our estimation, in consequence of this mode of irritation of the heart which is sometimes accompanied by an unpleasant sensation referred to the tissue of the organ itself, that the actions of the diaphragm and intercostal muscles are suspended. The singular influence of the regularity of the pulsations of the heart on the regularity of the inspiratory motions of the thorax has not been sufficiently reflected on. Nothing is more striking, in our opinion; a single intermittence in the action of the heart, is sufficient to interrupt the uniformity of the respiration and to give the patient the idea and fear of an attack of dyspnœa and of the inexpressible uneasiness which accompanies it. It is in fact, in this way, that most of the attacks of asthma are produced. As long as the heart is in a state of spasm, because it is irritated, and does not freely dilate, the muscles of inspiration are restrained in their action; the patient makes vain efforts to breathe freely; to fill his thorax with air, which he procures by opening doors and windows; he cannot succeed in this as long as the spasmodic convulsion of the heart continues.

Let it now be remarked, that the stomach always acts in unison with the diaphragm and muscles of inspiration; at the commencement of the paroxysm, this organ is in a state of constriction and spasm like the heart and the muscles which are appropriated to the wants of respiration, and it disengages some gases with pain, towards the close of the paroxysm; when the relaxed heart performs the diastole freely, and contracts with energy in the systole, the muscles of inspiration are forced to act fully, to produce

a dilatation in the cavity of the thorax proportioned to the volume of blood thrown into the lungs by the heart; and it is then also that the stomach, equally relieved from spasm and capable of contracting fully, because the muscles of inspiration can follow it, freely disengages gas and gives a sensation of appetite for food.

If expectoration is found to be reëstablished towards the close of paroxysms of asthma, it is less because the spasms of the capillaries of the mucous membrane of the bronchiæ have ceased, than because the blood is better propelled into the capillaries, and the action of expectoration is no longer prevented by the spasm of the muscles of inspiration. During the violence of the paroxysm, these muscles restricted by the spasm of the heart, would only obey the primary law which attaches them irrevocably to the motions, (then impeded,) of the heart and lungs; now that these motions are free and may be modified without danger, instinct permits the will to dispose the muscles of inspiration to cause a cessation of the painful sensation, a result of the presence of mucus on the sensitive surface of the bronchiæ, and the expectoration of this mucus, now more copious on account of the stronger impulsion of the heart, becomes possible

Such is, in our opinion, the mechanism of paroxysms of asthma, of the greatest portion of them at least; as long as they last, the circulatory action is diminished in intensity; the renewal of sanguineous molecules in the brain and lungs is retarded. Hence results the great uneasiness that accompanies these attacks, and not from the absence of expectoration. The impossibility of moving, and especially of walking, evidently arises from the imminence of suffocation which accompanies every movement of the limbs, tending to embarrass the already laborious action of inspiration; all this may be conceived without difficulty. In fact, the muscles of the limbs having their fixed point on the trunk, no locomotion can take place, except at the expense of the regularity of the action of inspiration. There must be a superabundance of air in the bronchial vesicles, for a person to be able to walk; now, the patient who is in a paroxysm of asthma has not a sufficient quantity of air in these vesicles, because his lungs cannot dilate sufficiently to renew that which fills the bronchiæ, because the mucus which encumbers the bronchial cavities cannot be

freely expelled, &c. How then would it be possible for the instinct to consent to the immobility of the thorax to gratify a caprice of the will? When the cause of the paroxysms of asthma is not a primary affection of the heart, it may be the irritation of the bronchiæ which prevents their dilatation and accumulates the blood in the pulmonary vessels. There are sometimes strong reasons for believing that this cause is nothing but irritation of the stomach; this is determined by the suffocations which so frequently occur in certain persons from the accidental exasperation of a gastritis. Be this as it may, in admitting the reality of these two local causes, it will still remain to decide whether the irritations of the stomach and bronchiæ do not rather act by influencing the heart and sympathetically producing the spasmodic state in it, similar to that idiopathically induced in attacks of primary asthma, than by acting, as is vulgarly believed in medicine, on the diaphragm and muscles of inspiration.

No physiologist will think of locating asthma in the nerves of the apparatus of inspiration; but it might be attempted to establish the cause of it in the brain or spinal marrow, since that of hypochondriasis and hysteria have been placed there. It cannot be doubted that cerebral congestions produce dyspnœa; but I have not yet perceived any premonitory or concomitant symptom of accumulation of blood in the brain, in paroxysms of periodical dyspnœa.

These explanations, which have appeared necessary to us to clearly comprehend the mode of action of vital causes which alter the organization of the heart, will serve at the same time to make known our ideas concerning asthma, a neurosis which is not treated of in the propositions on pathology. We cannot, in fact, connect this neurosis with any other affection more appropriately than with those of the organ which cannot be that of the circulation without at the same time being the principal regulator of the respiration. Let us continue our research of the causes which induce impediments to the course of the blood.

We stated, in the treatise on Physiology applied to Pathology, that inflammation could be introduced into the arterial system, either by ascending from the capillary system, or by descending from the heart: we have since added, that indepen-

dently of the channel of propagation, which belong only to cases of carditis, the heart might also inflame the arch of the aorta by the violence of the shock given to it by the blood which the heart propels against it when this organ is in a state of hypertrophy. We go still further; for we think, and we have already several times expressed it, that without being in a state of hypertrophy, or at least in so slight a degree as not to injure the arterial system during the apyretic state, the heart may, when it is strongly excited by a violent inflammation in a plethoric subject, propel the blood against the arch of the aorta, so as to establish a latent phlegmasia there, which sooner or later will induce the disorganization of this part of the arterial tube.

We do not believe, and we always speak from facts, that every chronic inflammation of the arch of the aorta, which is always accompanied with a dilatation of it, must necessarily extend themselves in this artery; but we think that this extension takes place in a great number of cases. Moreover, it is not this extension which produces the central obstacle to the passage of the blood; but this may arise from inflammatory concretions which form not far from the heart, and more or less near the arch of the aorta.

We have not satisfied ourselves that the venous system is always inflamed conjointly with the arterial system, but we think that this complication must be frequent. Our reason is, that in all the cases where there is a propagation of the inflammation from the internal surface of the heart to the arteries, this propagation must equally take place in the vena cava; and the more so, as all accelerations of the circulation distend the right auricle and the opening of the vena cava in a greater or less degree.

After the mechanical causes, and the vital causes of the normal state, we naturally pass to the vital causes of the abnormal state; that is, to morbid irritations of other organs which cause those of the heart and large vascular trunks which are inserted in the heart. In the first rank are found rheumatism and gout, since these ridiculous names are still given to irritations of the locomotive apparatus; but these affections are far from being the only ones which may give rise to disorders of the circulation. All metas-

tases may take place injuriously to the heart; thus chronic diseases of the skin may affect it as well as the acute; but there are obstinate irritations which, without changing their seat, exercise a great influence over the heart, and which even affect it the more vividly in proportion as they are more intense; these are irritations of the uterus, and especially those of the stomach.

We have said, in commenting on Proposition CLXXIV, what we thought of the mode in which acute inflammations produce irritations of the heart and vascular system. Having nothing to add to it, we will occupy ourselves in recapitulating the signs which may induce a fear of the formation of an obstacle to the course of the blood.

These signs may be derived from several sources:—

1st. *From the heart*, the pulsations of which are forcibly felt on the least exercise, especially in ascending, and are more or less irregular. Some persons feel from time to time a suspension of the action of the heart, or a kind of disorder and momentary revolution of this organ, which deranges the regularity of their respiration, and causes them a transient uneasiness; others experience pain in the heart itself, which they describe differently, according to their susceptibility, and the points of comparison which they may find in what they have felt at other times, and from other causes. All these phenomena are at first only transient, and physicians consider them as nervous. This is all right, if they only intend to encourage their patients, but it ought not to inspire physicians themselves with too great a security.

2d. *From arterial pulsations*, which are hard, vibratory, full, and from time to time suspended in a manner corresponding to the intermittent action of the heart.

3d. *From the respiratory function.* It is always more or less suspended when the action of the heart is irregular. Thus, when these are only momentary, the respiration is also only deranged for an instant; but, if the spasm of the heart lasts for some time, there are attacks of asthma, which at first short and slight, afterwards become long and violent. A sensation of fullness and itching in the course of the bronchiæ accompanies them. These attacks are at first dry, then they terminate by a more or less thick and copious expectoration, an explanation of which

we have given above, (see page 413.) We must also refer to the lesion of the respiratory apparatus, a pain which is felt by patients behind the superior part of the sternum and below the trachea, following the median line, with a sensation of fullness or itching, and a tendency to cough. This pain is augmented by exercise and by all emotions of the mind, ceases after repose, returns at a later period, and is always very troublesome. In some persons it appears to induce a dry cough, with isolated paroxysms, not unlike a gastric cough. This symptom has frequently sufficed to lead us to explore the heart, of which the patient had not complained, and the diagnosis was confirmed.

4th. *Sensations felt in the thoracic region.*—Pain or uneasiness in the region of the heart, in the whole left side of the chest, and even in the shoulder and under the scapula: a sensation of compression, as if the organs contained in the thorax were too voluminous, or the thorax itself too small.

5th. *From lesion of muscular action.*—This lesion in the region of the thorax corresponding to the heart, joined to the sensation of compression just spoken of, which appears to force the sternum towards the vertebral column, constitutes the group of nervous symptoms, which were at first termed angina pectoris, and afterwards sterno-cardiac neurosis, or sterno-cardialgia. It is tolerably well distinguished by a violent pain, with the characters above indicated, which extends from the shoulder to the arm, and even sometimes to the forearm, and which obliges patients to stop whilst walking. There is a simultaneous derangement of the action of the heart, which is always the point of departure of the pain and spasm of the surrounding muscles; the pulsations of this organ are small and rapid, and a gaseous eructation and pain at the epigastrium is added to it. Very slight grades of this group of symptoms must render it unrecognisable; some patients find themselves, in the commencement of the disease, forced to stop when walking, and especially when ascending, by a sensation which they cannot define, and even without their experiencing any pain in the cardiac region. Let the heart and arteries be examined in these ill-defined diseases, and we will soon be convinced that these attacks are owing to a spasm of the heart, the normal systole and diastole of which is replaced by a kind of vibratory

motion. It is this sudden change which suspends both locomotion and respiration, and it is to the lesion of the heart, rather than to a vague modification of the nervous system that we must attribute it.

In the muscles of the pelvic extremities, the painful sensations and lesions of muscular movements are nothing more than the sensation of fatigue referred to the knees, or rather to the middle of the thighs, of which we have spoken elsewhere, and which equally obliges patients to give up walking. If they still do not complain of the region of the heart, let it be explored without hesitation, as well as the arterial system, and we shall soon have an explanation of the pretended debility of which these kinds of patients complain, who are often of an athletic constitution.

6th. *From lesions of the brain.*—There are cases, and they are those of hypertrophy of the heart, where the first symptoms are manifested by weight or pain in the head, vertigo, dimness of sight, and hemicrania, which correspond to the exaltation of the action of the heart, to the heat which mounts into the face, to the pulsations in the arteries of the head, which sometimes even appear to raise the cranium; at other times the patients experience sensations of surprise, and even of terror, which they cannot controul, and which often greatly astonish them. When there is a combination of these symptoms, with a feeling of heat and bubbling in the region of the heart, the thing becomes tolerably evident, but when the patient does not direct attention towards this latter organ, the physician should be aware that it is important to explore it. We are equally obliged to refer to the brain the uneasiness in the limbs, and necessity of frequently changing place, a symptom which is sometimes met with in patients in whom the circulation is carried on with too much impetuosity.

7th. *From the stomach and duodenum.*—This symptom, like the preceding, belongs to incipient hypertrophies of the heart. It is rare, in fact, that those in whom the pulsations of the heart are violent, have not the tongue red and pointed, the pit of the stomach somewhat sensible, and the hepato-duodenal region renitent, and more or less painful. We presume this depends on the sympathy which associates the heart with the sto-

mach; but it would be possible, and in certain cases we should even be tempted to believe that the gastro-duodenal irritation was kept up by the sanguineous engorgement of the liver, caused by the difficulty of the disengorgement of the vena cava. The treatment appears to confirm this suspicion, when we find that an application of leeches to the right hypochondrium cures this engorgement better than general blood-letting, or capillary detractions of blood from the region of the heart. Our readers doubtless have not forgotten, that constriction of the epigastrium, and the formation and disengagement of gas almost always accompany spasms of the heart which interrupt the regularity of the respiratory action. Let us add, that the signs drawn from the stomach and duodenum, are of no value unless they coïncide with those which depend on the heart. But there are some cases, where the patients pay attention to the first only, and we should be warned of the possibility of the second, that we may not commit blunders.

8th. *From lesion of the general absorption.*—In fact, there are persons who, coming to consult a physician for the first time, complain of nothing except a disposition to infiltration, and to œdema around the ankles; there are others who complain of a simultaneous plenitude of the abdomen, in which an obscure fluctuation is perceptible. When no other cause for these imminences of dropsy presents itself, the duty of the physician is to explore the circulatory organs; he will often find there, the explanation of the disorder in the absorption, although at first the patients may not have called his attention to this point.

We pass over in silence, all the symptoms of the central obstacle to the circulation, considered in its highest degree of intensity, as this work is only designed for the exposition of imperfectly observed facts, and for the discussion of disputed points in medicine, and not for the didactic exposition of the symptoms and progress of diseases.

PROP. CCXIII.

Scurvy is a particular condition of the solids and fluids produced by an imperfect assimilation; its causes

are then various; but cold, want of light, sorrow, and bad food, are the principal. Extravasation of the fluids is one of the principal effects of the scorbutic state, because this disease renders all the tissues fragile; but the viscera, and especially the encephalic apparatus, resist this extravasation longer than the tissues by which the skeleton is invested.

It has been repeated to satiety that scurvy always depends upon debilitating causes. It was not enough to say this, since every case of debility is not attended with scurvy. Reasoning on the general tendency of the tissues to decomposition, observed in this disease, we have suggested the idea of a derangement of nutrition, which cannot be explained except by the radical weakening of the force of vital composition which presides over the formation of our fluids and solids.

If some authors be referred to, we should be tempted to admit it as a general thesis, that the nervous system is not affected by the scurvy, and that the viscera are exempt from it; the first opinion may be built on the authority of Lind, who asserts that he always found the brain and nerves in a healthy condition, whilst great disorganizations existed in the chest and in the abdomen; the second may be supported by the reports of naval surgeons, who adduce numerous cases of scurvy in which the patient seemed almost in the agony of death, and which were cured as soon as fresh provisions could be procured.

But if it be considered, on the one hand, that Lind was not well acquainted with the disorders of the brain, and, on the other, that the disorders which he found in the splanchnic cavities prove that the viscera are not exempt from disease in scurvy, it is necessary to entertain a different opinion. For ourselves we have become more convinced, the more we observe of this disease, that it is often exceedingly complicated, and that the nervous system and the viscera are primarily affected in it, although the effusions and organic alterations first manifest themselves in the external parts. In fact, scurvy is developed when many persons are collected together in dark places, although they

may have the best food. It occurs during damp seasons in hospitals in which food best suited to the constitutions of convalescents is furnished; salt, indigestible, badly-preserved food, rarely cause it in the poor when they dwell in well-ventilated, and especially in dry and elevated places; melancholy, especially despondency, favour its development; it always mingles with the group of symptoms of chronic gastritis, even in the purest atmosphere, when the patients are long deprived of every description of food, and especially when the inflammation occupies the whole extent of the digestive canal, and keeps the mucous membrane for a long period of a deep red colour; whilst it is never seen to complicate chronic affections in which that membrane preserves its integrity, unless the patients have long been subjected to damp and deficiency of light.

It appears to us to be deducible from these facts, that the derangement of the vital chemical power which really constitutes scurvy, is not essentially foreign to the nervous matter. This may be the case in scurvy entirely occasioned by bad food, whilst the patients dwell in a healthy atmosphere; but it is not so in the scorbutic affections produced by a damp, dark, and miasmatic atmosphere, and by grief, all which causes produce their first effects upon the nervous matter; consequently, though this matter may not appear altered in its texture, it is not less diseased than it is in all other pathological cases in which the subjects have been subjected to similar modifications. If Lind, who assures us of the normal condition of the brain, had possessed the knowledge of pathological anatomy which we now have, he would not have concluded from the absence of traces of suppuration, that there was a perfect integrity of the brain. He would have known that the nervous substance may be deeply altered, without any traces of it being discoverable after death, and that we must judge of its integrity rather by the manner in which it performs its function of innervation, than by the external appearance of the nervous tissue. Besides, there are, as we have said, signs of alteration of the brain with which the author was unacquainted; injection of the white or gray pulpy substance, its induration, its softening, the slightest alteration of its colour, opacities, infiltration, even the slightest adhesions of its mem-

branes, are positive proofs that the nervous matter has suffered much before death. We may then think that if authors have not discovered the brain and nerves to be affected in scurvy, it is because they drew their conclusions from superficial examination. They met with some traces of adhesive inflammation, suppuration, gangrene, and of scirrhus, in the chest, in the peritoneum, and in the cellular and serous tissues of the abdomen, and finding nothing similar in the brain, they concluded that there was a perfect integrity of the nervous substance, in the midst of the most frightful disorders of the other tissues. Such is the cause of the error. But the alteration of the mucous membrane of the alimentary and pulmonary organs, supposes that of the nervous expansions which make part of them; and besides, this tissue is never deeply affected without the cerebral pulp being so likewise. The functions of the brain are always observed to become deteriorated with those of the internal gastric sense, and whenever the brain deranges the functions over which it presides, we may be assured that the substance which composes it is more or less altered.

It is not solely by altering the cerebral substance, that gastritis produces scurvy; it is also because it prevents assimilation. The idea has been repeatedly entertained of comparing scurvy with putrid fever. This comparison is just. Putrid fever being only an acute gastro-enteritis, which decomposes the internal membrane which performs the first act of assimilation, must produce on the composition of the fluids and solids effects nearly analogous to those of chronic gastro-enteritis, a known and generally avowed cause of the scorbutic degeneration. If then the gums become red and putrid, and violet spots make their appearance on the body, in those who are at the point of death from gastro-entero-colitis, whether acute or chronic, these alterations should be regarded as representing ulcerations of the same nature as those which previously occurred in the internal surface of the alimentary canal. We have already said in our discussions respecting the facts periodically published in *"The Annals,"* that whenever a membranous phlegmasia is prolonged and extends, it assumes the brown colour. Well, this brown colour, when it becomes general in the skin, is a proof of a de-

rangement of assimilation, and the petechiæ or vibices which are sometimes added, are only ecchymoses produced by a vital modification analogous to that which we see in scurvy.

May we not from these facts advance, that the first modification upon which this disease depends, has its seat in the internal membrane of the alimentary canal, although the first perceptible external symptoms of it, as debility of the locomotive muscles, livid blotches, and inflamed brownish gums, differ from the usual signs which commonly characterize acute or chronic inflammation of that membrane?

This modification of the alimentary mucous membrane which produces a brownness, ecchymosis, and infiltration of the cutaneous and cellular tissues, remains to be determined. All that can be said upon this subject is, that it appears to us to be an irritation excited by deleterious substances, or at least substances that are repugnant to life. It is known that our system reäcts against, or is irritated by such substances, whether they come from the exterior or are produced in our organs. Putrid fluids produced by the decomposition of our humours, are equally as irritating to our living tissues as external bodies. The same may be said of deleterious gases, as can be proved by thousands of cases. Why then should it excite astonishment, that scurvy, which we may henceforth consider as a species of poisoning, was engendered sometimes by the necessarily imperfect assimilation of innutritious materials, and sometimes by an alteration of the apparatus which presides over the primary assimilation? In the first case, which corresponds to sea scurvy, to that which occurs in years of famine, when the food is spoiled, the system, although healthy, cannot form good chyle, since it acts only upon bad materials; in the second, which is that of well-nourished scorbutics, but living in a dark, moist, super-animalized air, the system, or rather the nervo-sanguineous substance, charged with the assimilation, is first poisoned by the miasms which destroy the assimilating faculty. Finally, whenever scurvy succeeds to chronic gastro-enteritis, it may be said that the inflammation, whatever may be the cause of it, has placed the assimilating membrane, and the whole encephalic apparatus corresponding to it, in that state, to which, in the first case, indi-

gestible food, and in the second, miasms or deleterious gases have reduced them. Thus the result is *still the same*, and this result is always a derangement of assimilation, the immediate effect of the diminution of the vital affinities, of which muscular debility, sero-sanguineous infiltrations, and hæmorrhages are the external symptoms.

PROP. CCXIV.

The phlegmasiæ readily associate with scurvy, but they do not depend upon it; they arise from causes which produce them in all persons; such is the inflammation of the gums.

PROP. CCXV.

External violence, violent movements, stimulating medicines, and the phlegmasiæ, easily produce the rupture and disorganization of the parts modified by scurvy, because the vital chemistry is languishing, and vitality is diminished in scorbutic individuals.

Here is the enigma; this complication explains the reason why the ancients divided scurvy into two species—warm and cold scurvy. It is clear that cold scurvy is scurvy in its simple state, that is, muscular debility, leaden paleness of the skin with black blotches, (scorbutic petechiæ, vibices, and ecchymoses,) easily produced by pressure, the cellular tissue infiltrated with a more or less bloody serosity, pale, brown, and sometimes spongy, fungous, bleeding, but not inflamed gums. The patients are languid, the slightest movement puts them out of breath; the frequent palpitations of the heart, and the facility with which they faint, proves that this organ partakes in the general debility of the muscular system; the infiltration of the limbs soon renders them hard, painful, and contracted; the swelling increases; dangerous hæmorrhages from all the openings of the

mucous membranes spontaneously occur, and sometimes the blood comes from a distance; finally, the patients lose all power of locomotion, and suddenly perish, often in attempting some unusual movement.

Such is simple scurvy, without any excitation which can add to it a sensation of heat. It is then the cold scurvy of authors. Some chronic inflammations, even of the most disorganizing nature, will not alter its character; but add to it inflammation of the gums of some activity, and there will be in the mouth a heat which will threaten to terminate by gangrene. Add to it acute gastritis or gastro-enteritis, and the patients will quickly succumb in a state of horrible fetor, with copious hæmorrhages of black and dissolved blood, and this the more readily as these gastro-enterites may be themselves dependent on a miasmatic poisoning. But to continue; let acute colitis or dysentery be associated with the scurvy; it will quickly exhaust the patient by a bloody and colliquative diarrhœa. If peritonitis be added, the disease will be still more speedily fatal. If acute catarrh, pneumonia or pleurisy be conjoined with the scurvy, congestion and disorganization will so rapidly take place, that the patient will be suffocated much more promptly than in ordinary cases. It is from such complications that the frightful disorders already mentioned occur, and have led to the belief that the brain, where we find nothing perfectly analogous, does not participate in the scorbutic degeneration; but now all that must be suffered in receiving the influence of inflamed organs is understood, and it is known what injuries these influences may produce in the tissue.

Scorbutic patients, almost constantly exposed to the action of cold moisture, do not escape rheumatism and intermittent fever. The first of these two affections may exist in the acute form, producing immense phlegmons which destroy whole limbs, and very painful arthritis, followed by collections of bloody pus in the articulations, with caries of the extremities of the bones and separation of their epiphyses. If the rheumatism be only chronic, and does not produce heat, it is confounded with the usual pain of infiltrated or contracted limbs; the pains in the limbs are perhaps the principal source of torment to scorbutic patients.

As to intermittent fevers, they are, as we shall soon see, irritations which assume periodically the febrile state; and as all the tissues of scorbutic patients are fragile, incurable disorganizations readily result.

As to chronic inflammations, sometimes they become exasperated to a degree which produces fever and heats the system, and sometimes they destroy the parts and cause them to fall into thin shreds, especially on the exterior of the body, without any phenomena of acuteness being the result. It would be useless for us to dwell upon this point.

What we have said suffices to connect scurvy with the physiological doctrine. Let us present a summary of this commentary: scurvy is of itself a derangement of nutrition, the immediate cause of which is the diminution of the vital affinities, a diminution which induces two things, a weakening of contractility and a facility to extravasations, and the remote cause of which is reduced either to the introduction of materials not susceptible of being assimilated, or to the debilitating of the assimilating power by causes independent of the materials which are submitted to it. When inflammation is added to the scorbutic diathesis, that is, to the debility of the vital affinities actually existing and diffused in the system, it more readily effects the disorganization of our tissues than in any other circumstances of life. However, it ought not to be forgotten, that there are many degrees of the scorbutic diathesis, as there are many in the activity of the causes which excite inflammation in the bodies affected with this diathesis.

PROP. CCXVI.

The physiological causes of dropsy are obstacles to the circulation of the blood and lymph, the sympathetic influence of chronic phlegmasia, the cessation of the action of the depurative capillaries, imperfect assimilation, and debility.

The first of these causes having been elucidated in treating of the obstacles to the course of the blood and other fluids, we have

only to devote ourselves to the consideration of the remaining causes. The sympathetic influence of chronic phlegmasiæ upon the more or less remote cellular and serous tissues, is a cause of dropsy, at present generally known and avowed by all practitioners. We shall nevertheless offer some elucidation of this subject.

Chronic phlegmasiæ of the cellular tissues or chronic phlegmons, which do not implicate the viscera, act in two ways, viz. 1st, by the extension of the focus of irritation, which produces the œdema of a limb, when the focus of suppuration occupies only circumscribed points in it; 2d, by a sympathetic influence which manifests itself in the opposite limb, or in any other region of the subcutaneous tissue. We have seen a contusion of the scrotum produce an œdematous swelling, quickly followed by a general dropsy, from which the serous membranes were not exempt. To these two modes of the production of dropsy, must be added the communication of inflammation to the ganglions, to the veins, and to the principal trunks of the absorbent vessels of a limb, when the phlegmon is so situated as necessarily to implicate them.

Chronic inflammations of the parenchymatous viscera, as of the lungs, the liver, or the spleen, produce serous effusions in different regions by nearly analogous influences. We discover there, 1st, that of the cellular tissue which enters into their proper composition; this influence is first perceived in their serous membrane; it is afterwards repeated more or less in the remainder of the exhaling and absorbing surfaces; 2d, the part which the lymphatic ganglions and vessels of the diseased parenchyma assume in the irritation with which it is affected; 3d, the impediment which the local congestion may offer, by compressing the large veins, to the return of the blood towards the heart; 4th, the constant afflux of the fluids towards the interior, which deranges the regularity of the action of the skin, and ultimately destroys the customary cutaneous function; 5th, the stoppage of the action of the kidneys.

Chronic inflammations of the mucous membranes also produce dropsy in various modes. They act in our opinion, 1st, by obstructing the action of the skin and of the kidneys, by deter-

mining serous fluids to the interior; their follicles having changed, their functions become converted into abnormal eliminators, to the detriment of the true eliminators, which lose their habit of action; but as the mucous secretions do not suffice for the evacuation of all the superfluous serosity, the action which retains it in the interior of the body, is communicated to the serous and cellular tissues, the surfaces of which become filled with fluids; 2d, by the debility which they produce, either by evacuating a great quantity of gelatine, or by hindering the first assimilation, or by exhausting the forces by the muscular contractions which they excite, and the pains which they produce; such are the efforts of coughing, inseparable from prolonged pectoral catarrhs, and the convulsive actions and pains of the limbs which accompany dysenteries and chronic diarrhœas; 3d, by the influence which they exercise upon the large vessels, and by communicating inflammation to them, as for example, to the vena porta.

Chronic inflammations of serous membranes act by less complicated influences. In the first place there are two modes of acting, which are common to them all; these are by interrupting the action of the normal eliminators, by drawing from them the serous fluids, and by sympathetically disposing the other surfaces of exhalation, large or small, to also retain their fluids. This influence is also exercised, and even *a fortiori*, by one portion of a serous membrane upon all its remaining portion, in cases where the serous phlegmasia is very circumscribed. Afterwards it is necessary to take into consideration the mechanical effects, the serous collection in the great cavities, which always exerts upon the large veins a pressure more or less injurious to the return to the heart of the blood charged with lymph, and to the introduction into the venous radicles of that which the lymphatic mouths have absorbed. We do not allude to the influence of hydrocephalus upon the cellular or serous tissues of the other parts of the body; it produces accidents more formidable than those of dropsy.

The cessation of the action of the depuratory capillaries, that is, of the skin and kidneys, is an effect of different chronic phlegmasiæ, in which are comprised all the sub-inflammations of the same organs. At present we are only to consider this cessation

as the primary cause of dropsy. These cases occur whenever there is a suppression of perspiration, caused by the sudden application of cold to the skin, either cold air, the immersion of the body in cold water, or lying on a cold surface, and a general dropsy occurs, or an effusion restricted to some internal or external portion of the body. These cases should be connected with those in which the perspiration is suddenly arrested by a moral affection, those which produce shivering or horripilation, as terror, horror, with feeling of aversion, or by the sudden ingestion of a quantity of very cold water, whilst the body is in a state of perspiration; finally, we cannot fail to observe the same physiological modification, that is, the succession of internal exhalent action to serous elimination of the skin, in dropsies which immediately follow the application of an astringent, which has repelled itch, tetters, and even acute inflammation, as erysipelas. Similar dropsies have been sometimes induced by frictions with ointments containing sulphate of alumine, sulphuret of potash, or baths impregnated with corrosive sublimate, employed for the cure of prurigo, or obstinate itch.

There are some dispositions of the system, moreover, very difficult to be discovered, which are so little favourable to the action of the kidneys and cutaneous exhalents, that if a large quantity of liquid be swallowed at once, the serosity which it furnishes is not eliminated by the normal passages, but is viciously directed towards the cellular and serous exhalent surfaces, producing there true dropsy. We have seen this in different persons who had swallowed, within a short period, a great quantity of fluid, neither too warm, nor too cold, and besides of a harmless nature, as broth, and the pectoral or diuretic ptisan, pure water, &c.; some to cure a cold or a gastritis; others for the relief of a urethritis; and others finally, to ward off an attack of gout. In all these cases it may be said, that the action of the absorbents is greater than that of the eliminatory exhalents. This disposition sometimes exists in those who have been suddenly weakened by great losses of blood; large quantities of fluid having been absorbed in such persons, they become hydropic in the same way that dogs do, in whose veins a quantity of water has been injected.

The secretory action of the kidneys may be suddenly arrested by nephritis, gastritis, &c. Dropsy rarely results from this; but the possibility of it is conceivable, if any other modification of the economy obstruct the supplementary action of the skin.

Imperfect assimilation is enumerated in the proposition among the principal causes of dropsy. There is nothing in this which should appear strange after what we have said in the article on scurvy. We have observed cases in which the use of crude and very aqueous food occasioned œdema of the extremities and even of the whole body, without scorbutic degeneration, although the patients were not subjected to the influence of moist, cold, and miasmatic atmosphere; much more should we expect to meet with the œdematous disposition in persons who live upon food of bad quality, or badly preserved, during the winter of years of scarcity, in low and damp situations, and in besieged places, where foul water is drank, where persons are surrounded by moist and infectious air, and live upon mouldy, putrid, and often entirely indigestible food, or upon articles not usually taken for that purpose.

Finally, debility occupies the least important station among the causes of dropsy, though for a long period, it was considered by the classic authors as the most important. We allude here, as may be readily conceived, only to pure debility, and not to that which concurs with the preceding causes to the production of dropsies; for it is not possible to doubt that long-continued obstructions to the course of the blood and of the lymph, chronic phlegmasiæ, want, scurvy, dampness, and bad food, weaken the contractility, and diminish the power of absorption. Debility without complication, is met with in convalescents, who do not preserve any other traces of their disease; their legs swell at night from the effect of position; the whole surface of the body appears disposed to œdema, and the abdomen itself is doughy, and swells whenever the patient exceed the limits of strict sobriety. Debility is also simple in persons who have suffered copious losses of blood, and especially when these losses have been repeatedly experienced within a short period, before the patients have had time to recover. But when the hæmorrhage acts by a focus of chronic phlegmasia, the cause of dropsy is complex.

Of all these causes mentioned, that which approaches nearest to this last is want with the use of too watery food, and living at the same time in a damp atmosphere: however, it cannot be said that the debility is always pure and simple, on account of the chronic phlegmasiæ of the digestive mucous membrane and the derangement of assimilation which usually occur.

We long ago suggested that mineral substances, and especially the mercurial preparations might produce a tendency to dropsy; but we regard this cause as belonging to one of the preceding class of causes, because minerals act either by occasioning chronic inflammation of the alimentary canal or by impeding its powers of assimilation and producing a scorbutic diathesis. We may say the same of the different poisons, to which the power of producing dropsy has been attributed.

From all these details respecting the etiology of dropsy, it is easy to determine those which depend on irritation, and those which should still preserve the title of passive, which was formerly given, if not to all, at least to by far the greater number of them.

PROP. CCXVII.

Irritation presents natural intermissions in a state of health.

This proposition is derived from normal physiology, because this physiology is the basis of the abnormal; a person cannot be always in the same degree of excitation. A thousand causes make it vary both as regards its seat and degree of intensity. The periodical returns of certain irritations, as of those of the menses, hæmorrhoids, and the flow of urine in some persons, serve to maintain the equilibrium, and are a proof of this intermittence of irritation which does not pass beyond the normal state. The attempt to ascertain the first cause of it would be an illusion; we must content ourselves with observing, and not testify more astonishment at the morbid intermittence than at that of the state of perfect health.

PROP. CCXVIII.

Morbid irritation may be intermittent in all the apparatuses and organic systems.

It must be understood in the systems which enjoy a certain vital activity; for frequent displacements of irritations are scarcely possible in the substance of the hard bones. Periostitis is sometimes however displaced, but does not disappear and return periodically within a short period. Still more, must care be taken in order to discover the intermittence of irritation in the bones; even the displacement and transfer of it from one bone to another can scarcely be observed. The tisssues in which irritation readily takes place are those in which it is capable of promptly disappearing and returning according to certain types. These tissues are those of soft consistence and which are abundantly supplied with nervous matter and sanguineous capillaries. Those which are destined to serve them as a point of support, to sustain and defend them; those which vegetate in an habitual torpor, without taking part in the primary and sympathetic perturbations which maintain the vital state, are the less exposed to the intermittence of irritation, in proportion as they approach nearer to the osseous state, that is, as their vital activity is more powerfully restrained by saline, metallic, or earthy molecules, which give them resistance and solidity. The tissues in which intermittence of irritation may be observed, in following the order of vital activity, which is nearly that of aptitude to the phenomena of irritation, are the nervoso-sanguineous expansions forming the brain and the membranes of relation of the great visceral cavities; the visceral ensemble itself, viz. the stomach with the duodenum and their appendages; the heart and the lungs with their pleuræ; the remainder of the mucous and even serous tissues of the abdominal viscera; the nervous branches of the locomotive and sensitive apparatuses; the skin and the openings of the mucous membranes.

As to the cellular tissues, the ligaments, the cartilages, and the bones, we cannot include them in this enumeration, conse-

quently we think it proper to give the proposition the following form, viz.:

"*Morbid irritation may be intermittent in almost all the organic apparatûs and systems in which acute inflammation can be developed.*"

PROP. CCXIX.

Morbid irritation may continue in an apparatus in a moderate degree, have periodical exacerbations, and return during the intervals to its first state. In this condition, when it is moderate, it awakens but few sympathies, but during its exacerbations it developes a great many; these are the remittent, subintrant,* and other fevers of authors.

In fact, it is thus only that we can figure to ourselves the alternate phenomena of the exacerbation and remission. Remittent fevers are continued acute phlegmasiæ, the exacerbations of which are more marked than those of ordinary phlegmasiæ, and commence with a coldness of the extremities, or of the whole exterior of the body, with or without tremor. To this, chill, dry heat, with increase in the frequency of the pulsations of the heart and hardness of the pulse, succeeds; afterwards the pulse becomes softer and moisture appears on the skin, and a more or less copious sweat terminates the paroxysm; after which the frequency of the pulse, and the heat and dryness of the skin continue more or less, until another chill announces another paroxysm, which may recur at various intervals, that is, every other day, every day, or even several times in the same day.

But hitherto we have spoken of the circulation only, and this is not sufficient in the existing state of the science. It is necessary to determine, not why the paroxysm recurs at certain intervals, nor even why it recurs, but what is the irritation which keeps up the febrile action. If it were in the heart or in the

* Those fevers, primitively intermittent, in which a paroxysm comes on before the preceding one has passed through its stages, are called by authors subintrant.—Trans.

blood-vessels, there would be no necessity of seeking further; it does not necessarily exist there, since post mortem examinations show it elsewhere, and when it is found in the heart and blood-vessels, it constitutes only a complication which has its symptoms—those of cardio-enteritis or of phlebitis. Some have supposed this irritation to be seated in the nervous system; but how can any one adhere to this hypothesis, which we shall directly investigate, when we observe evident signs of phlegmasia in some of the great viscera. Those organs which are most frequently more or less intensely inflamed in this *fever*, but without intermissions, are the stomach and duodenum; and their accessory organs although not necessarily equally inflamed, always participate in the irritation of the former. The organs next most frequently inflamed are the lungs, and sometimes the brain. It must not however be concealed that the most common seat of inflammation which keeps up remittence is the superior part of the digestive organs.

If it be demanded upon what we found our assertion, we will answer that it rests, 1st, upon the symptoms of continued gastritis, which are never absent, at least in the commencement, and upon those of other visceral inflammations which sometimes exist with the first, and always when the first no longer exist; 2d, upon the constantly bad effects which result from irritants applied to that part of the alimentary canal in which the inflammatory irritation predominates, for they always exasperate either that of this canal or that of the other viscera; 3d, upon the great success and the facility with which cures are effected by the antiphlogistic and judicious revulsive treatment, that is, by the physiological method or that founded on the irritability of the organs; 4th, upon post mortem examinations, which show traces of the inflammation which is the cause of death.

After having made these comparisons, the proposition may be understood, when it states that irritation which constitutes the foundation and maintains remittent fever, is at first moderate; that when it is so, it produces little sympathy, (period of remission;) that when it becomes exasperated, it produces more, (period of the paroxysm;) is it not clear in fact that if it were constantly in a high grade, it would not allow of a remission of the fever sufficiently for the external surface of the body to become chilled?

and is it not evident that when during the chill a new congestion is formed in the inflammatory foci, it is their reäction upon the heart, through the intervention of the brain, which compels it to struggle to relieve itself and to propel the mass of blood into the vessels of the periphery? The proof of these two assertions, is that on stimulating the irritated viscus, it is exasperated to such an extent, that it maintains the sympathies of the febrile state to a degree of intensity which causes the paroxysms to disappear, and there is then a continued fever, attended with exacerbations, but without any chill. The fact of this fever being more dangerous than the remittent, is another proof in our favour.

PROP. CCXX.

Intermittent and remittent irritations are always attended with exaltation of the sensibility and contractility, and consequently with congestion, either in the principal seat of the disease, or in the parts where it awakens sympathies.

It may even be asserted, that without this exaltation of the irritability of an organ, congestion cannot take place; for without irritation, there is only a mechanical obstacle to the course of the fluids which can produce congestions; again they are not active. Consequently we must conceive an increased innervation in an apparatus, as the proximate cause of a paroxysm; next, the attraction of fluids to them which produces congestion, and finally, the transmission of the irritation, where it is first excited to several others, (sympathies received by these last,) whilst the irritation can never remain purely local after it has attained a certain degree of intensity. We must also suppose the innervation developed in the sympathizing tissue, as attracting the fluids towards itself, like the organ primarily affected, so that the consequence of a primary congestion will be several other consecutive ones.

The exaltation of sensibility is first marked in the organ primarily congested; for the patient always, at the commencement

of a paroxysm, complains of a painful sensation in one of the principal viscera; but when, in the progress of this primary congestion, several other are formed, the *self* finds itself assailed by so many painful sensations, that none of the local ones are any longer very distinct, unless some viscus maintains a predominant irritation. This is what we will soon discover in the intermittent and remittent fevers, termed pernicious or malignant.

PROP. CCXXI.

Intermittent and remittent irritations are always phlegmasiæ, hæmorrhages, neuroses, or sub-inflammations, which are displaced, and terminate spontaneously by critical metastases. If they are not displaced, they are converted into continued acute or chronic phlegmasiæ, hæmorrhages, neuroses, or sub-inflammations.

The facts have accumulated in this proposition; we find there all the proofs collected together, upon which the physiological theory of intermittent fevers rests.

If a person be examined during the paroxysm of fever, symptoms of predominant irritation of one organ will always be found; and if the irritated organ be attentively examined, its condition will appear to be the same as in the acute affections, which are termed inflammations, hæmorrhages, neuroses, or sub-inflammations. Thus most generally, there will be pain, with sensation of heat; if the organ is visible, redness and tumefaction will be evident; if it is not, their existence may be inferred by the aid of the sympathies in the same way as they are discovered in continued inflammations. There will be some cases from which there will be a hæmorrhage from the predominant point of irritation; others in which only nervous phenomena will be observed; and others finally, but which are the most rare, in which the sole predominant symptom will be irritation of a secretory organ, which will furnish a more abundant secretion than usual, or the tumefaction of a superficial gland.

Whenever the local phenomena are very marked, a febrile

action is added to it. Follow this now attentively, and in a few hours its nature will be observed to change. The hard and contracted pulse will become developed and soft; the skin will be soft, less dry, and will soon be covered with a copious sweat; the urine at first clear and colourless, then reddish, but depositing only a sediment of a brick-dust colour, soon contains an opaque mucous matter, of a somewhat purulent character, which forms a copious sediment. The patient will afterwards be observed to be, if not in a state of health, at least as well as he was before the paroxysm; at the same time the above-mentioned local phenomena are dissipated, so that you are disposed to believe that nature has made, in the space of a few hours, what at other times she does not accomplish except in a labour of several days, that is, the resolution of a point of irritation presenting the four characters of phlegmasiæ, by means of a febrile action and critical evacuations by the normal excretories.

If we find so much similarity between continued and intermittent local irritations, the ancient classical writers have not found less between the fevers of these two general types, which are equally believed to be essential, whether they be attributed to the humours, or they be considered only as groups of symptoms which characterize them. What we call the prompt critical solution of an irritative local congestion, the humoralists call the coction and elimination of a morbific humour by crisis. The whole difference, according to them, consists in this, that the humour of intermittent fevers is easier of *concoction* than that of continued fevers, or rather in this, that being too abundant, it cannot be concocted without repeated ebulitions. Hippocrates has calculated and compared, and his school laid it down as certain, that what nature did in seven days in a common bilious fever, it required seven paroxysms, that is, twenty-one days, to accomplish in a tertian fever which equally depended upon a depravation of the bile. It would be very easy for us to fill many pages with pathological facts whose interpretation would confirm the analogy of the continued febrile states with intermittent fevers of different types, but it is sufficient for us to have indicated them; every one will recall a superabundance of them to mind.

The second part of the proposition contains the greater number of the proofs in favour of the physiological opinion respecting the nature of intermittent fevers. The phenomena of local irritation which determine the febrile state, commonly disappear spontaneously with the fever, to reäppear after the lapse of a certain time, and to again disappear as before; here then the periodicity of irritation is well established. But if these local irritations are made to persist, if they be kept up by strong doses of stimulants applied to the suffering part, or to that which most closely sympathizes with it, the solution of this irritation will be prevented, and instead of intermittent it will be rendered continued, either in an acute or chronic form.

The nearer the pretended essential fevers approach to continuity, the easier will it be to change paroxysmal into continued fevers. Thus remittents become continued more readily than quotidians, and the latter more easily than tertians, &c. After what we have said, the reason of this will readily suggest itself. This degeneration takes place more readily in spring than at any other season, in warm than in cold climates, in vigorous, sanguineous persons than in those of an opposite constitution, in irritable individuals than in those of obtuse sensations, &c. It sometimes occurs spontaneously, but it is more commonly caused by the premature employment of stimulants which are early administered in these kind of diseases; and then it should be recollected that the more irritable the organ which receives it, the easier is it to determine the change from the remittent to the continued state. These secondary continued fevers are of the same nature as those originally continued; these are always acute phlegmasiæ of the great viscera.

The substitution of continued chronic irritation under one of the four principal forms, (inflammation, hæmorrhage, neurosis, and sub-inflammation,) to the remittent and intermittent type, by the abuse of febrifuges, is much more common than that of the acute inflammation which we have just considered; it is observed in an immense number of cases in which stimulaters flatter themselves with having effected a complete cure. It is most commonly inflammation or chronic neurosis which the patients have to suffer; sub-inflammation is subsequent-

ly frequently joined with it; hæmorrhage occurs only accidentally.

This imperfect termination of paroxysmal fevers is little known to physicians attached to the ancient doctrines. The paroxysm once removed, these physicians think that they have done every thing; and if the patient has a long convalescence, with want of appetite, or with excessive appetite but painful digestion, eructations, and other symptoms of chronic gastro-enteritis, they look upon these phenomena as indications of a disease independent of that which they believe they have cured. They do not think entirely so of engorgements of the liver, of the spleen, and of the lungs consecutive to paroxysmal fever; they term these the *reliquæ* of fever; but they misunderstand the true cause, the physiological cause, the only one which can lead to the proper mode of treatment.

Such is the amount of the principal truths contained in the proposition upon which we are commenting; we have said enough to point out to conscientious physicians the proper route.

PROP. CCXXII.

Intermittent and remittent fevers are periodical gastro-enterites; but the encephalon and the other viscera are sympathetically irritated the same as in continued fevers, and may also become the principal seat of periodical or continuous irritation or inflammation.

The nature of intermittent and remittent fevers was determined in a general manner in the preceding proposition; the present one goes further; it affirms that fevers are periodical gastro-enterites, which are sometimes followed by other visceral phlegmasiæ, that is, it specifies the first seat of the local irritation which determines the febrile periodicity, in laying down the principle that the chief point of irritation may abandon that seat to occupy another. It has been already demonstrated in the early commentaries, that the organs sympathetically irritated by inflammation may themselves become inflamed to such a de-

gree as to produce revulsion from the part first affected, and become the principal point of irritation. The same epigenesis may supervene in intermittent and remittent fevers, so that after having responded to the epigastric region, the predominant symptom may respond to the lungs, the head, or some other point of the visceral apparatus, sometimes even to some region of the locomotive apparatus. In fact, there is no prolonged intermittent fever, which does not develope a particular point of irritation, first occurring in the paroxysms, and finally constituting a phlegmasia or chronic sub-inflammation, which causes a disappearance of the febrile intermittents.

This proposition has been vehemently contested by many physicians, who have pretended that the paroxysms of fever can be attributed to the nervous system only, and they always suppose debility. This double allegation is so vague that at present we are astonished to hear it from educated men, and who have taken the pains to follow the progress of the science. If the reflexions we have previously made in treating of the neuroses be remembered, it must be evident how little physiological it is, not to say any thing more, to place in the nerves a modification of the economy in which the circulation is accelerated—the stomach heated and relishing cool fluids which it absorbs with avidity—the skin at first dry, afterwards covered with sweat, and the urine red and with a brick-dust sediment—a modification in which the blood may be exhaled in abundance by the mucous membranes, in which the bile is sometimes copious and acrid, as is the case with all the humours when the excretories are super-irritated—a modification finally in which rapid congestions form which inundate the viscera and render them incapable of performing their functions. How can the gastric irritations which very often are converted by a single dose of bark into violent gastro-enterites, after which traces of inflammation are discovered, be referred to the nerves? Have we not even shown in the history of chronic phlegmasiæ, that most of the alterations which are met with in the bodies of those who have died from prolonged intermittent fevers, can be solely attributed to inflammation?

When we reflect on all this, we say to ourselves, that the au-

thors whose opinions we contest have not intended to represent to us intermittent fevers as neuroses; we are forced to ascribe to them sufficient sense to have observed that the sanguineous system is violently affected in the paroxysms of periodical fevers; we cannot then avoid believing that they have not intended to attribute the immediate cause of the excitement of the heart and of the whole circulatory apparatus to the nervous system. However, if they do so, we would ask in what the paroxysm of intermittent fever differs, as respects the proximate cause, from a fever excited by a moral affection: is not the cause of both a modification of the nervous system which excites the sanguineous system? and may not one as well as the other continue in the most intense inflammatory form?

But we go further, if the fact of an increase of innervation calling into action the sanguineous system were alone wanting to authorize pathologists in saying that a disease is seated in the nerves, or depends upon the nerves, they would be compelled to hold the same language whenever they meet with an inflammation produced by a moral cause. Thus, when pneumonia or encephalitis is evidently excited by that cause; when the erysipelas which occurs after violent paroxysms of anger, results from it; when hæmorrhages are the effect of that passion, and when they are extinguished by fright, and a violent inflammation results in some organ, a very common circumstance, we should always refer this to the nerves, and believe that all these diseases have their seat in the nervous system. Nay, more. We must not hesitate to consider as nervous all those which may be produced by cold, and we again find here phlegmasiæ of the chest with acute rheumatism, inflammatory as they are supposed to be; for it is evident that cold acts on us only because our bodies are sensible and reäct against its impressions, which it can do solely through means of the nervous system. If our nerves were less irritable, if they were not organized so as to force the sanguineous system to reäct against cold, we would become torpid like cold-blooded animals, or like those which hibernate, on the first impression of cold; we should afterwards perish whenever it was of any intensity, as thousands of French perished on the plains of Russia when it was excessive. But we

reäct, and all the inflammations occasioned by cold depend solely upon the derangements, produced by the super-irritated nervous system, in our functions, and especially in the distribution of our fluids, whether primary, secondary, or secreted. We should go much further in these comparisons, if we wish to seek all the cases of inflammation and sub-inflammation which have their evident cause in the action of the nerves upon the vessels, we would see even the inflammations from wounds arrange themselves in this category; but these facts are sufficient for our purpose. Let us proceed with our argument.

If excess of innervation presides over the development of so many sanguineous congestions generally recognised as inflammations, it is not peculiar to the active congestions in the paroxysm of intermittent fever, it cannot furnish them with a distinctive character, nor cause them to be considered as more nervous than all other congestions of the same form which are produced by the same proximate cause; in short, this excess of innervation does not render them more nervous than all others are.

But an asthenic state of the system is admitted to coëxist with the nervous. That this additional cause may be present, it is necessary that the patients affected with intermittent fever should be more feeble than those having admitted sthenic continued fevers, which is not the case; for a person who has constantly fever is always weaker than he who has it only in paroxysms; but it is especially necessary that intermittent fevers should never be cured by debilitants, whilst physiological physicians daily furnish, and by thousands, proofs to the contrary. The peculiar character of intermittent fevers is, then, neither the nervous condition nor the debility of the patients; we must consequently seek elsewhere some differences.

Is it to be found in the remote causes? Without anticipating the discussion which the proposition relative to intermittent fevers will demand, we may affirm that those causes would not furnish these fevers either with a nervous or any other character, since they also produce different diseases, even the most inflammatory continued sanguineous irritations. Submit ten persons to the most active causes of intermittent fevers; let them sleep under imperfect shelter, in the open air, with an empty

stomach, in the midst of marshes, you may have but three or four of them affected with these fevers, with two affected with bronchitis, one with pleurisy, one with pneumonia, one with rheumatism, or rather with ophthalmia, odontalgia, angina, &c.; this is a known fact. Let us leave this point lest we become tiresome.

The peculiar character of intermittent fevers cannot be derived either from the true proximate cause, nervous excitation; nor a proximate cause which is not real—debility, nor remote causes which produce other diseases; that character can be obtained only from the phenomena themselves of intermittent fevers. These phenomena are of two general orders: the state of excitation or the paroxysm, and the state of calm or the apyrexia. But the paroxysm is in all respects entirely similar to many other febrile actions which do not reäppear; it is then entirely by the apyrexia and the return of the irritation that intermittent fevers are characterized; in other words, they consist of congestions in appearance similar to those which are continued, but which differ from them in ceasing to reäppear at stated intervals. Let us now study these congestions with renewed attention, to ascertain to what extent they are analogous to the continued.

PROP. CCXXIII.

Every regular paroxysm of intermittent fever is the sign of a gastro-enteritis, the irritation of which is afterwards transferred to the cutaneous exhalents which produces the crisis. If the irritation be only incompletely displaced, the fever is remittent; if it be not displaced at all, the fever becomes continued.

It is established in the preceding proposition that the active sanguineous congestion of the febrile paroxysm primarily occurs in the digestive apparatus, and especially in the stomach, the duodenum, and their dependencies, in short, in the group of organs situated beneath the diaphragm; that from thence the irritation radiates, which is sympathetically repeated in the other

organs, may become predominant in them, that is, more intense than that of the primitive focus. But then the paroxysms do not appertain to the regular form; they are no longer according to the primitive type of the intermittent fever, that is, characterized by predominance of the gastric irritation over all the others. It is on that account that the epithet *regular* is employed in the present proposition to refer the paroxysms to the gastric symptoms, from which it receives its type. In this manner it is preserved from the reproach of having supposed that all the paroxysms of intermittent fever are necessarily gastro-enterites. On the contrary, the admission of that epithet in the proposition—the terms of that of the CCXVIIIth, which says, *that morbid irritation may be intermittent in all the tissues in which acute inflammation may be developed*—and those of the CCXXIst, which refers all intermittent fevers to one of the four general forms of continued irritation, should lead to the conclusion, that whenever the paroxysm of an intermittent is not characterized by the phenomena of a rapid gastritis, it should be by those of another phlegmasia of equally rapid progress, or by those of a hæmorrhage, of a neurosis, or of a sub-inflammation. However, as this last form is very rare, and the two others not common, it results that it is the inflammatory congestion which is most usual in the paroxysm of intermittent fever, and nothing is easier than to apply to all the organs in which it can occur, what is here said of the predominant congestion in the epigastric region. These congestions, and their prompt solution by a crisis directed towards the cutaneous exhalents, are then the type of intermittent fever, and constitute the characteristic idea of it. Whenever the paroxysms do not consist in that, they are either imperfectly developed, or too near to the continued type, or already degenerated by exhaustion of the forces produced by the long continuance of the fever, or the ill-directed efforts of the healing art. Let us then take a correct view of these paroxysms, by selecting the most simple, those with predominant epigastric congestion, and recall the phenomena which we observe, lassitude, yawning, stretching of the limbs, &c. These symptoms, although produced by the cerebral innervation, are the effect of an already existing irritation, and perceived in the centre of the

body by a sensation of heat, a kind of constriction, with diminution of appetite; the same sensations are experienced at the commencement of gastritis; they are not produced by simple cerebral irritation as we shall soon see.

There is joined with this a kind of constriction of the muscles of respiration, which do not sufficiently dilate the chest. At the same time, the pulsations of the heart are accelerated and become smaller than previously, which coïncides with the sensation of coldness of the skin and the trembling, which may be excessive. These phenomena may lead to the belief that the heart is first affected; but neither the commencement of carditis, in which that viscus is acutely inflamed, nor those of the paroxysms of asthma, in which its constriction is more nervous that inflammatory, exactly resemble what has just been described, whilst that is observed in the commencement of all sudden attacks of what were formerly called gastric fevers.

The heat increases, it produces thirst, and the tongue as well as the whole mucous membrane of the mouth, becomes redder than natural. The patient's appetite is still further lessened. The resemblance to acute gastritis is more and more evident. The appearances of cephalitis, of carditis, and of asthma, disappear.

There is increased derangement in the regularity of cerebral innervation, when the paroxysm reaches this degree; for the person affected with fever who perceives all these sensations, that of central constriction, of cold, heat, lassitude in the body and limbs, &c. is no longer inclined to muscular exertion; and although he may be far from being delirious, his character is changed, he cannot perform the same intellectual efforts as in health; besides, it is evident we must repeat it, that the pain in the limbs, the constriction of the heart and that of the muscles of inspiration, must arise from the influence of the irritated brain. But how can we deduce from that, which is the *primum mobile* of the paroxysm, when we see that its own irritations commence with symptoms much more deeply implicating that viscus itself, and when we observe that heat, thirst, and tremors, do not occur in the primary irritations of the brain, unless they are accompanied with those of the stomach and upper portion of the intestinal tube?

The analogy is then exact as respects the development of the paroxysm, only in the commencement of febrile gastro-enteritis of the mildest grade, which were formerly termed either gastric fevers, or inflammatory ephemeral fevers.

The same analogy continues in the period of the decline, when a more or less abundant perspiration occurs, followed by sleep of longer or shorter duration, after which the state of remission or that of apyrexia manifests itself.

We are told in the proposition that the crisis by sweat may take place without the gastro-enteric irritation being entirely removed, and that that constitutes the remittence. This is perfectly true, for if the gastric phlegmasia had ceased, it could no longer keep up the febrile action. The application of leeches to the epigastrium in the paroxysm of remittent fever very often proves this. By removing the gastritis these local sanguineous depletions destroy the febrile action interposed between the paroxysms, and change the remittent fevers into intermittent, when they do not at once cure them.

The proposition does not add that when the internal irritation is completely displaced by the perspiration, the fever becomes intermittent; that would be to repeat what it had just implicitly said; but it concludes with the assertion that if the irritation ceases to abandon, even incompletely, the gastric membrane to dissipate itself by the cutaneous exhalents, this constitutes the change of a fever, whether intermittent or remittent, into a continued. This evidently shows that on assuming a higher degree of intensity, the inflammation which was previously susceptible of being displaced or moved, ceases to be so, and enters into the class of continued inflammations.

PROP. CCXXIV.

The masked, latent, or disguised fevers *(fièvres larvées,)* of authors, are periodical irritations of different systems or apparatuses, either internal or external, but in which the heart is less affected, and the general heat little or not at all exalted.

Compare this proposition with the following sentence in the preceding commentary: "Whenever the paroxysms do not consist in that, (an active and febrile sanguineous congestion speedily resolved by a crisis,) they are either imperfectly developed, or approximate too near to the continued type, or are already degenerated by the exhaustion of the forces," &c. The larvaceous fevers of authors arrange themselves in the first of these terms. They are really either sanguineous or nervous, or sub-inflammatory congestions, which, on account of being feeble or directed upon organs of little influence on the system, do not sufficiently affect the heart to excite a well characterized febrile action. It is sufficient to recall the cases on which authors have bestowed that term, to be forced to admit the correctness of our assertion. The term larvaceous fevers has been given to ophthalmias which commence like common ophthalmias, but which after spontaneously disappearing, reäppear at regular periods; they have been thus termed, 1st, because they occur from exposure to the same causes which usually produce very marked intermittent fevers; 2d, because they are cured by cinchona. For the same reason they give the same denomination to periodical phlegmasiæ of the nose, cephalalgia, ondontalgia, amaurosis, neuralgia, colic, dysuria, and many other local irritations, more frequently external than internal, equally periodical, always exempt from fever, and even any considerable derangement of the great functions.

All this justifies what we have just advanced; but similar facts ought not to be lost to the physician who wishes to elucidate his progress by useful comparisons. If we have had reason for comparing these circumscribed morbid phenomena of the exterior of the body with more extensive hidden disorders, and which are even believed to be general, intermittent fevers, it was wrong to call the first larvaceous fevers, and it is the very opposite that should be done at the present day. External intermittent irritations should be considered as faithful images of internal intermittent irritations which excite periodical febrile actions, thus, the eyes and the nose become irritated, redden, inflame, and periodically get well; just as also in regular intermittents, the mucous membrane of the alimentary passages, becomes irritated, reddens, inflames, and periodically is restored to its

normal condition when the fever is completely intermittent. But as the gastro-duodenal mucous membrane exercises upon the brain and heart a more powerful influence than the conjunctiva or the skin of the nose does, it excites in its periods of irritation, sympathies which these last do not excite; and these sympathies are the febrile condition, with all the nervous phenomena and the derangements of the secretions which characterize a febrile paroxysm. But the intermittent external irritation is visible, whilst the internal one is not; it is then rather this latter which should be termed larvaceous; and this denomination would be the more suitable to it, as until the present time no one has deprived it of the mask which disguised it to all eyes.

We will carry the analogy further, for we will even assert that as there always is a little uneasiness in the conjunctiva between the periodical returns of inflammation, so also the gastro-duodenal mucous membrane always preserves some traces of the inflammatory irritation which it has suffered during the paroxysm. We may verify this in all fever patients who have not yet been or who have been improperly treated. This interparoxysmal irritation is even so general that we might be tempted to believe that every intermittent fever possesses a remittent character, and fundamentally consists of a continued phlegmasia which becomes exasperated at certain intervals to reproduce the paroxysm. Can then the numerous evils which the abuse of cinchona has produced excite astonishment!

Persons whose visceral senses are delicate, and who besides are endowed with the spirit of observation, tell us that they are conscious of a point of irritation persisting in the stomach or in the duodenum during the most perfect apyrexia. That a permanent point of irritation seated in the digestive apparatus should induce, on becoming exasperated, congestion in its vicinity, appears easily understood, and even much more probable than the periodical return of an irritation entirely dissipated with the preceding paroxysm; but that an active congestion in the viscera, with the characters of regular intermittent fever, should be provoked by a point of irritation on the external surface of the body, sometimes even at the extremity of a member, cannot fail at first to excite surprise. Such cases are however far from

being rare; we see persons in whom the presence of a sound in the urethra occasions paroxysms of tertian or quotidian fever. We have reported in the *Annales de la Médecine Physiologique*, many examples of intermittent fevers excited and kept up by ulcers of the legs, and by wounds of the knee or other parts of the body. But if we reflect ever so little upon these cases, our surprise will cease, since it is superabundantly proved by the comparisons which the physiological doctrine is constantly pointing out, that all irritations received by the brain from the external nerves of relation, are by it reflected to the tissue of the viscera, and principally to the organs of the epigastrium and to the tissue of the heart. By accumulating facts and showing their coïncidence, we shall ultimately, I hope, habituate intelligent persons to the physiological method.

As all external intermittent irritations are not inflammatory, or rather attended with copious congestion of blood; as some of them are nervous, that is, attacking branches of nerves and affecting the form of neuralgia, is it not possible that the same may take place in the viscera? The answer to this question appertains to the following commentary.

PROP. CCXXV.

The fevers which are called pernicious or malignant, do not differ from other fevers, except in violence and in the danger of the congestions.

It is established in the preceding propositions relating to paroxysmal fevers, and in the commentaries upon them, that these fevers consist in general of an active sanguineous congestion which takes place in the principal viscera, with fever, and which is resolved in a short time by a critical perspiration; that in the regular form of the disease, the sub-diaphragmatic apparatus, charged with digestion, is the principal seat of this congestion; that it is determined there by an irritation, at its commencement always persistent, sometimes apparently intermittent or sympathetic at an advanced period; that this irritation producing at

determinate intervals a new afflux of innervation and blood towards the tissues which it occupies, produces there the congestion in question with spasm of the heart, just as an acrid and caustic substance suddenly placed in contact with the internal gastric sense does; that this complex irritation diminishes the impulsion of blood towards the exterior and produces pallor and chill; that the reäction induced by the regular performance of the vital laws, replaces this painful innervation and tends to the concentration of the actions in the centre of the body, by an opposite innervation which manifests itself by the cessation of the uneasiness, the freedom and fulness of the action of the heart which propels the blood into the vessels of the periphery, and dissipates the irritation by profuse sweats; that in the first aberration of these regular movements the predominance of congestion in some other part of the visceral apparatus than the epigastric centre is observed; that a second aberration consists in innervations and congestions too slight to be febrile, which happen either in the same organs or in those of the second order, and which, when they are visible, show us the true nature of intermittent fevers. We now arrive at the third general anomaly of intermittent fevers: it is that already announced, which consists in the tendency to congestions, that is, of the irritation which determines the continued state; it is in fact, in this series that we are forced to place the diseases which are termed pernicious fevers, and we proceed to give the proof of this.

When an irritative visceral congestion, (the result of irritation,) previously transient, ceases to be resolved, whatever may be the first cause of this want of resolution, one of two things results from it; either the heart resumes its activity in losing the spasmodic irritation on which the chill depends and which fetters its movements, and it developes a febrile heat which keeps up the congestion become permanent, thus changing the intermittent fever into simple continued or into remittent continued: or the heart, far from resuming its activity, gradually loses it and entirely ceases its functions, which ends in death.

It is not always easy to foresee, from the aspect of a visceral congestion which extends beyond the duration of the preceding, which of these two terminations is most likely to take place.

The physicians of our time, frightened by certain classical authors, have often expected death in cases where the prolongation of the congestion has caused only a continued phlegmasia with accompanying fever; among these diseases, some have assumed the character of the most violent continued, known by the term of malignant putrid fevers, and have terminated in the different modes that they do; whilst the others have terminated after some time, in the chronic state, like irritations which have not, at their origin, been intermittent. In other cases, death, which was expected in twenty-four hours, the ordinary term of a paroxysm, does not take place until after several days; which also makes intermittents enter into the series of continued fevers; finally, in other cases which have appeared still more extraordinary, the paroxysm, become permanent, has taken all the characters of a violent phlegmonous inflammation, which required an antiphlogistic treatment, after having been considered in its commencement as the most asthenic pernicious fever. Let us add, that too frequently this transformation and that into typhoid fever have been entirely the effects of the excessive administration of stimulants.

These facts have produced confusion in the doctrine of the malignant fevers of Morton, of Torti, and others; a doctrine which some would maintain in its original purity, and which others would condemn in an entirely too exclusive manner.

This arises from a too hasty generalization from special facts: all congestions more violent and obstinate than their antecedents do not threaten death in the very paroxysm; every death that occurs during the paroxysm is not the effect of a radical debility, nor the proof that it would have been wrong not to have stimulated in the apyrexia or the remission which preceded the paroxysm; we must, to relieve ourselves from the embarrassment into which at first this involves us, consider what might have been the state of the viscera before the fever, and determine whether they were not previously congested by a chronic irritation; we must next estimate the strength of the patient, and ascertain whether the determining causes of the periodicity are not complicated with other causes of a deleterious property; a question which we shall soon consider.

It results from what we have just said, that fevers with visceral congestions are the sole ones which can assume a malignant character; for it is impossible for an irritation of external tissues, and even of the viscera so moderate as to excite no febrile action, to threaten immediate danger. However, it may happen that these periodical congestions without fever, or these larvaceous fevers, instead of terminating by resolution, may assume the continued type; and it will be readily granted that this constitutes an additional reason in favour of the distribution we have just made of intermittent irritations.

As to internal congestions which give rise to fears of a fatal result, and which on that account, are termed malignant, their distinctions are established by anatomy and physiology. It is evident that there should be as many species of these as there are organs in which these congestions can occur, or at least as are susceptible of the phenomena of irritation, which always produces them, whatever may be their intensity. Thus we should refer to the stomach the malignant irritations termed gastralgic, emetic, flatulent, &c.; to the stomach and duodenum, acting upon the liver, choleric; to the intestines, dysenteric and those congestions whose paroxysms are characterized by colic; to the heart and sometimes perhaps to the brain, syncopic; to the lungs, pneumonic and pleuritic; to the heart alone or it with the stomach and lungs, asthmatic; to the brain, apoplectic and convulsive, &c. But it must not be imagined that the irritation and congestion which endanger life, are limited to the organ whose suffering gives a name to the species. Every intermittent congestion sufficiently violent to be febrile, whether it be malignant or not, implicates the whole of the viscera, though one of them may be more affected than the others.

As to the varieties which are observed in the affection of the same organ or apparatus, they can only be attributed to the tissue in which the irritation predominates, or rather to its degree: it is thus that cerebral congestions show themselves, sometimes under the form of delirium, at others under that of convulsions, and at others again under that of coma, according as a more or less violent irritation predominates in the white or gray matter, or in the membranes, and to the greater or less quickness with

which it induces congestion in those parts. It is from a similar cause that intermittent pulmonary congestions assume one of the three known forms of continued irritations of the lungs; that those of the heart show themselves sometimes under the form of hypertrophy, which renders the heart large and bounding, and sometimes under that of pericarditis, which weakens, enfeebles the pulse and tends to produce syncope or to perpetuate the chill; that the congestive irritations of the digestive canal, far from acting constantly upon the mucous membrane and forcing it to super-secretion, affect the muscular, causing violent colic, and even pass to the serous tissue where they develope all the symptoms of peritonitis.

It is also possible, it is not even very uncommon for the predominant point of irritation to change in the same patient at several successive paroxysms, so as to lead to the belief that there is an attack of a new disease; but at present physicians are on their guard against this insidious course.

Consult the authors who have collected violent cases of all kinds, and you will be convinced that in all countries and in all seasons in which intermittents, and especially malignant intermittents have been common, that there have always occurred continued diseases simultaneously affecting the same organs; but to confirm this, have recourse to the physiological method, for ontological authors will only converse to you of humoral entities or of groups of symptoms named from those which are most prominent, or at least those most formidable in their eyes. But when they tell you that bilious, putrid, pituitous, nervous, typhoid, &c. fevers, have prevailed simultaneously with intermittents of the most malignant character, and that it has often been difficult at first view to distinguish them, you will understand them perfectly and will be more and more sensible of the importance of the physiological classification which was proposed in Prop. CCXXV.

PROP. CCXXVI.

Dropsies which succeed to intermittent fevers always depend upon one of the five causes or physiological modifications indicated in Prop. CCXVIII.

These causes are obstacles to the course of the blood and lymph, the influence of a chronic phlegmasia, the cessation of action of the depuratory capillaries, imperfect assimilation and debility. Let us see how they may coïncide with intermittent fevers.

The *obstacle to the circulation of the blood* always temporarily exists during the chill, because there is constriction of the heart; the two venous systems also swell at this moment, not being any longer able to readily empty themselves into the heart, which does not permit itself to be dilated. Examine patients at this period, and you will find them with short interrupted breathing, the pulse contracted, the heart convulsively labouring, instead of freely dilating and contracting: they will all complain of a kind of oppression of the chest, somewhat resembling asthma, and you will often observe in them short paroxysms of dry cough, depending on the accumulation of blood in the pulmonary vessels; they experience a sensation of constraint in the sub-diaphragmatic, and especially in the hypochondriac regions in which exist two parenchymata, equally well supplied with blood-vessels, and from the same cause, that is, because the course of the venous blood is impeded by the spasmodic condition of the four cavities of the heart, the whole independently of the feeling of fatigue which produces rapid contractions of the diaphragm. It should be understood that the repetition of these venous congestions must ultimately weaken the contractility of the absorbent system or produce inflammation in it, and what was only transient may become continued. Then dropsy is inevitable.

We have at present, (June, 1828,) in the hospital of Val-de-Grace, a young soldier, convalescent from chronic entero-colitis, whose case supports our assertions. He was thin, nevertheless, having been attacked with a paroxysm of fever, he also became affected with pulmonary congestion in the first chill. It was afterwards perceived that at each return of the congestion during the chill, which was always accompanied with cough and dyspnœa, the face increased much in size: this constantly takes place, it is a true œdema induced by the impediment to the return of the blood to the heart. It disappears during the hot stage, but I expect to see it become permanent. The obstacle to the circu-

lation of the venous blood has then much to do with the production of febrile dropsies.

The *influence of a chronic phlegmasia* cannot fail to very frequently contribute to this, especially in patients improperly treated by febrifuges, and who have become affected with chronic gastro-duodenitis, with tumefaction of the liver. Since this cause by itself induces dropsy, it may certainly contribute to the production of it when aided by numerous repetitions of obstructions to the circulation of the blood. Besides, hepatic congestion is itself an impediment to the discharge of the vena porta, which must tend, if not directly to general dropsy, at least and very certainly to ascites, which ultimately occasions it. The same must be said of chronic colitis and peritonitis, diseases which readily become associated with badly treated intermittent fevers, in cold and damp places.

But the abdomen is not the sole seat of the chronic phlegmasiæ of fever patients; the thorax also suffers, and neither the red indurations of the pulmonary parenchyma, of which we have given examples in the *History of Chronic Phlegmasiæ*, nor the enormous pleuritic collections so readily produced by the chill of febrile paroxysms in moist and warm climates, should be forgotten.

The *cessation of the action of the depuratory capillaries* applies here to the cutaneous depuration. The depravation of this important function is, in prolonged intermittent fevers, a consequence of repeated congestions which accumulate the fluids in the viscera and cause the skin to lose its character and habit of exhalation. If, on the other hand, resorption has become difficult in the lymphatic system, is there grounds for astonishment, that the kidneys and lungs cannot suffice for the evacuation of the superfluous serosities, and that dropsy should be the result of it? We have charged the deviation of the transpiratory action of the skin, with being the sole cause of dropsy when it supervenes on the early paroxysms of fever, in patients who have no chronic phlegmasiæ or any obstruction to the circulation of their blood. The cure of this kind of dropsy, in persons whose strength is not exhausted, is easily effected, and is obtained by all the medicaments, which actively excite the different secretions; it is the

same in cases in which dropsy has been produced by the chill alone, without any febrile paroxysm. It is doubtless the success obtained in cases of this nature, which has given so much celebrity to certain diuretics, as well as to several active purgatives which have kept the epithet of hydrogogue.

Imperfect assimilation cannot contribute to the dropsies of fever patients except they are in those states in which that cause may by itself occasion these diseases, and in the cases where the assimilating force has been deteriorated in the mucous membrane of the digestive canal, either by the duration of the fever, or by the violently irritating medication which has been opposed to it. Mineral substances destroy this membrane in persons affected with intermittent fevers as well as in others.

Finally, *debility* cannot fail sometimes to play a part in the production of the dropsies under consideration; but they should not be ascribed to this cause, when they occur in the commencement of fever or when the patients are abundantly nourished and treated with wine and diffusible stimulants. It cannot then exert any influence except in cases where the obstacles to the oxigenation of the blood has debilitated the patients, in those whose strength has been exhausted by chronic phlegmasiæ, in those in whom the assimilating power of the mucous membrane of the alimentary canal has been destroyed by certain permanent tonics or bad food, in cases where persons are badly nourished and dwell in a too damp atmosphere, and are subjected to other circumstances equally favourable to the destruction of the irritability of the absorbent vessels, without forgetting the too abundant losses of blood which may be occasioned by the paroxysm itself, as is seen in malignant intermittent or remittent fevers.

PROP. CCXXVII.

The most common external causes of intermittent fevers are atmospheric alternations of temperature; but every thing which modifies the animal economy in the same manner as these atmospheric vicissitudes may engender and more especially reproduce these fevers.

What we have hitherto said respecting the vital modifications which constitute the paroxysms of fever, tends to prove that they consist in two orders of phenomena: 1st, a modification quickly developed in the splanchnic apparatus, and which appears under the form of a sensation of uneasiness, oppression and constriction distinctly perceived in the sub-diaphragmatic region, with spasm of the heart, which organ ceasing to propel the blood as usual in the arterial system, permits it to stagnate in the venous apparatus. Hence results an accumulation of that fluid in the lungs and head, in the liver and in the whole apparatus of digestion, whilst there is less of it in the whole locomotive apparatus and in the skin. It is this which occasions the diminution of the natural heat of the periphery, renders the patient more sensible to the impression of external cold, and produces in him another painful sensation which causes tremors, when it becomes somewhat intense. Two sensations then predominate at the commencement of the paroxysm: that of oppression and of constriction in the centre of the body, and that of coldness in the skin and uneasiness in the muscles contracted by the convulsive shocks of the chill. This is the period of spasm which is at the same time that of the concentration of the fluids in the splanchnic apparatus, but still more in the system of the vena porta than in the lungs; for the capillaries of this viscus stimulated by the oxygen, by the respiratory action and by the neighbouring though weakened impulsion of the heart, give a greater impulsion to the blood which flows towards the left auricle, than that portion receives which flows towards the liver from the radicles of the vena porta.

2d, A modification characterized by the cessation of the oppression and constriction of the centre, by the free action of the heart which unloads the viscera of the blood stagnant in their veins and propels it with such force in the arterial system, that the periphery swells, the skin becomes warm and sweat escapes by all the cutaneous pores.

Before going further, we will offer some very important remarks. During the period of the chill, when the fluids are accumulated in the viscera, the internal secretions are copious, whilst the contrary is the case in the hot stage. In the former stage the urine is clear and copious, the mucus fills the bronchiæ

and excites cough, the gastric secretions accumulate in the stomach with the bile and excite vomiting, &c. This stage is also that of danger in malignant fevers, in which we cannot fail to perceive an unusual exaltation of the same phenomena: as vomiting of mucous matters, of bile, and even of blood, with violent gastralgia; colic with dysenteric discharges; accumulation in the bronchiæ of a mucus which the patients cannot expectorate, not having sufficient command of the muscles of inspiration; hæmoptisis; pulmonary apoplexy; weight and pain in the head; delirium; convulsions; cerebral apoplexy; true serous inflammations, at least momentarily, when there is a determination towards the serous surfaces in one of the three visceral cavities; such a spasm of the heart that this organ becomes itself painful and threatens to take on inflammation, or to cease its action; an insurmountable coldness, when its spasm cannot be overcome; and the danger of sudden death, for patients whose blood is not renewed in the lungs, do not respire sufficiently and must perish of asphyxia; syncope from the same cause, and with not less danger, &c. &c. But on the contrary, as soon as the poly-visceral spasm has yielded, as the heart is able to propel the fluids into the arteries of the periphery, as its impulsion has been sufficiently prolonged to force the exhalants of the skin to give a free passage to the serosity of the blood, this excretion puts a termination to the perturbating impulsion of the system and the morbid condition is relieved.

If it be demanded why the free impulsion of the heart does not open the internal secretories as well as the external exhalants, we would answer that there is no necessity of explaining now this exception. We know positively that whenever the action of the heart becomes quicker than common, without its systole being impeded by any spasm, the mass of the arterial blood reaches the periphery and is soon considerably diminished by the perspiratory exhalation; it is perfectly evident that this too violent deviation of the blood towards the external vessels, is one of the vital laws most conducive to our preservation, by preventing fatal visceral congestions; it is not less certain that the dewy perspiration which evaporates from the surface of the skin, confers upon us the double benefit of relieving us from an increase of heat which might become dangerous, and in diminishing the

fulness of the vessels which are overloaded from the excess of animal heat.

The reason of this important law, should no more be sought for than that of most of the primary vital laws: it suffices that it is well determined. I assert then, without regarding primary causes, that the uneasiness of the viscera and the morbid increase of their excretions coïncides with the cold stage, which is that of spasm and of the concentration of the fluids in the interior; whilst the sensation of relief coïncides with the hot stage, which is marked by the cessation of the spasm, the repulsion of the fluids towards the exterior, and the substitution of evacuations from the skin for those of the organs constituting the visceral apparatus. This truth being well understood, we may enter upon the investigation of the etiology of intermittent fevers.

We lay it down at once as a principle, that is, as a primary truth in the series of facts which we wish to examine, that the spasm which invites the blood into the viscera, which impedes the action of the heart and favours the central congestion, is nothing else than an abnormal exaltation of the nervous action of the viscera, that is, an irritation. We advance in the second place that, in the normal condition, the perturbating impulsion, which suddenly produces this irritation, has its principal seat in that part of the splanchnic apparatus where the nervous system most predominates, that is, in the sub-diaphragmatic organs, and especially in the stomach. That the cause of this irritation acts through the intervention of the brain is undoubted; but as the brain does not then retain this irritation, but reflects it to the nervous apparatus of the viscera, as we have a hundred times proved, it is clear that it should predominate in those which have the greatest number of nerves, and observation proves this to be the case, by showing that in an immense majority of cases of intermittent fever, the irritation which excites the paroxysm has its principal seat in the stomach and upper portion of the intestines. The only exceptions to this are those cases in which some other organ than the stomach, is more irritated or more disposed than it to irritation, when the exciting cause acts upon the system.

We will not accumulate here proofs of this assertion. Some of them have already been enumerated in the commentary on

Prop. CCXXII, others incontestibly result from the effect of stimulants prematurely administered. Post mortem examinations furnish the strongest, but it is rare to be able to make them in the acute stage; this can happen only in cases of accidental death. Finally, if a little attention be given to what we are about saying, we hope that additional proofs confirmatory of the preceding will be found.

The most generally received opinion at the present period is, that intermittent fevers are occasioned by the air of marshes, and that they depend upon miasms of animal or vegetable origin which are given out by them. I have long since combated that belief. The air of marshes has not the specific power of producing paroxysmal fevers; they are produced by alternations of heat and moist cold to which the living body is subjected. Wherever mankind are exposed to these vicissitudes, intermittent or remittent fevers may be met with. It is perfectly evident that marshy places are more favourable for their production than any other; but it is impossible to deny that intermittent fevers may be contracted in places where there are no marshes. We have even seen them prevail during rainy seasons, in sterile and elevated situations; and we daily see these fevers arise in the best paved cities and where there are no marshes, as well as in the best kept hospitals, and that for the sole reason that water often falls around these buildings which cools the atmosphere by its evaporation. Intermittent fevers also occur on the borders of the cleanest and best walled canals, although no marsh exists in the neighbourhood, when there is no breeze to dissipate the vapours which arise during the day, and which at night cool the atmosphere in falling to the ground.*

If intermittent fevers occur only from the action of the causes we have just pointed out, it may also be believed that moist air does not alone act in their production, for there are always some puddles exposed to evaporation, although they are certainly very

* It is perhaps, almost unnecessary to observe, that M. Broussais has not made himself acquainted with the true theory of dew as ably developed by the late Dr. Wells and universally received at the present day. The deposit of the vapour in the atmosphere, upon the ground and surrounding objects, is the effect and not the cause of the cold.—Trans.

deficient in miasmatic emanations; but when intermittent fever attacks a person previously in good health, after having been wet by a sudden shower in a healthy place, or from having kept on for some time his wet clothes after having fallen into running and very pure water, it is not possible to maintain that emanations from decomposing animal or vegetable bodies are necessary for the production of that disease.

If the febrile intermittence may be occasioned by the influence of cold alone, marsh miasmata are not necessary for its production; they do not produce the fevers which prevail in marshy places, these miasms may be taken into the system with impunity if cold and moisture be guarded against. But if these miasms have nothing to do with the intermittent form of the fevers which prevail in marshy places, this is far from being the case as respects the danger attending the paroxysms of the same fevers. These vapours must be considered as gaseous poisons whose virulence varies according to the activity of the heat and the direction of the winds which disperse these miasms or collect them around the habitations or places which persons are accustomed to frequent. We now see that these miasmatic foci may be very active without having a large surface, and that the borders of certain pools, marshes or the gravelly borders of a small river, but filled with filth, may be more noxious than vast moist meadows bordering the largest river.

The dangerous modification which miasms impress on the paroxysms of intermittent fevers are, in vulgar opinion, that which renders them malignant. We are also ourselves entirely of that opinion; but we conceive ourselves here obliged to recur to the distinction established above: among the paroxysms which by their violence tend to become continued and even threaten a fatal termination, there are some, the danger of which depend either upon the excess of the plethora and the inflammatory action, or on the antecedent alteration of an organ affected with chronic phlegmasia or with sub-inflammation, whilst others owe their alarming intensity to the impression of the miasms contained in the moist air which excites the paroxysms. All the symptoms above enumerated, from which fevers derive their epithet, malignant, may be recalled to mind: it will readily be supposed

that the most irritable individuals and those who are debilitated by some preceding disease, the seat of which or the organ is already weakened from the effects of long-continued abnormal nutrition, must be more violently affected by the miasms than those which enjoy a perfect equilibrium. The gaseous poisoning from marshes must then often concur with the inflammatory predisposition, to give to intermittents the malignant character, and to render them fatal in the early paroxysms. It is on that account that we have advised that attention should be paid to the cause; that is, to ascertain whether moist cold has acted alone, or whether it has not been aided by miasms—what is the activity of the latter, and whether their impression has been made upon healthy or diseased organs—upon a vigorous subject or on one exhausted, and with or without alteration of his principal viscera.

The question which now presents itself does not yield in point of interest to the preceding, since it is that upon which the curative indications ought to be based: it is to determine the mode in which cold combined with moisture, and the miasms which often concur with it in the production of intermittent fevers in general, and particularly those termed malignant, act.

If cold diminishes the circulation in the vessels of the skin and subcutaneous cellular tissue, it must necessarily increase it in those of the viscera. This modification is more durable when cold is combined with moisture, but whatever may be its duration, a period arrives when it ceases, and when the blood is thrown back into the vessels of the periphery until a renewed impression of cold again repels it towards the centre. It will be, we hope, entirely agreed that these super-normal accumulations of blood in the viscera, and the reäction which dissipates them, are active phenomena; they may be even considered as states of super-irritation which are somewhat abnormal, and the frequent repetition of which cannot be supported with impunity. In fact, it is thus that the habitual equilibrium is lost, and that the predisposition to congestions decidedly and obstinately morbid, is established; but they are not all intermittent. There are no epidemic paroxysmal fevers, which are not accompanied with numerous continued phlegmasiæ of the same viscera in which the intermittent congestions occur; and often as we have already said,

there exists a continued phlegmasia which becoming exasperated at intervals, invites into the parts which it occupies a new congestion which is but imperfectly resolved.

But is it also necessary to give the name of inflammation to congestions which are resolved so that scarcely any traces of them remain? Why not; since the excess of innervation and the afflux of blood with excess of local calorification are the causes of it, as is fully proved both by the sympathies of the intermittent congestion, which are those of the phlegmasia, and by the examination which may be made of congestions on the external surface of the body, which have so inappropriately been termed larvaceous fevers? Why not; since the irritation which persists in the intervals of the great congestions is itself a slight congestion kept up by a proportional irritation; since the irritants, applied to the affected parts, most frequently maintain there the congestion, and render it no longer different from the phlegmasia; since all the intermittent congestions, over which neither art nor nature have triumphed, are ultimately converted, if not into acute phlegmasiæ, at least into continued chronic phlogoses?

It remains now to make the same demands relative to periodical congestions, between which no trace of irritation can be discovered. Many physiological physicians do not hesitate to call in question the existence of these perfect apyrexias: they think that some point of the visceral apparatus, and especially of the digestive organs, always preserves a state of chronic phlogosis; and it is from that point, according to them, that the impulsion arises which, extending to the heart and to the whole tri-splanchnic nervous apparatus, causes the paroxysms, in the same way than an ulcer of the leg, or a sound left in the urethra, excites them.

We would be the more disposed to adopt this opinion, since whenever intermittent fevers continue long obstinate, the patients are ultimately affected with chronic inflammation of some viscus, and almost invariably of the digestive canal; an inflammation which is probably nothing else than the extension of that which kept up the febrile paroxysms. What is certain is, that we very often meet in practice with patients who although long treated by the most efficacious febrifuges, are still affected with

febrile paroxysms, conjointly with unequivocal symptoms of gastritis or of a chronic enteritis; and that to cure them the best means consist in the persevering and unwearied use of a demulcent regimen, to which stimulating frictions cannot be added but with the precautions necessary to prevent their reäcting too actively upon the interior.

If the patients in whom fever appears the most completely intermittent be examined, we are much deceived if some traces of chronic phlegmasia in the chest or in the abdomen and particularly in the hepato-duodenal region, be not met with.

The cures obtained by the administration of cinchona, and other modifications of different actions, but always more or less exciting, do not constitute any formidable objection against the existence of chronic inflammations and sub-inflammations in intermittent fevers; we have over and over proved that a great number of circumscribed inflammations may yield to a stimulation, which acting at once or successively upon many very irritable points of the digestive apparatus, developes a great number of sympathies, excites many secretions, and produces a very extended revulsion. This is the more applicable to intermittent and remittent fevers, as stimulants cannot be resorted to with impunity in those in which the inflammation is still intense between the paroxysms, and the cinchona is successful, only after debilitants. The physicians who have bled least in these fevers, have at least made their patients abstain from food and diluent drinks, and have even thought it necessary to commence by the emetic or purgative medication before trusting to febrifuges.

These evacuating stimulants, preceded by direct debilitation, have then, thus to speak, broken and often even greatly weakened the inflammatory action, when stimulants which induce revulsion without any evacuation were administered. It was only under these circumstances that the few cures could be effected in epidemic fevers; and when these conditions were neglected the intermittence was almost always changed into acute continuity. Besides, how many cases are there, in which the cures, upon which the prevailing theory rests, were not complete, and consisted solely in the substitution of a new mode of irritation,

which at a later period would become the cause of an organic affection whose origin was misunderstood, because these persons had passed some time without experiencing a febrile paroxysm, and had regained their flesh and strength? We sometimes felicitate ourselves on having suddenly arrested by enormous doses of cinchona, the paroxysms of a supposed malignant fever: well! I have often met with persons who supposed themselves to have been snatched from the arms of death; they consulted me for incurable gastritis, hypochondria or duodeno-hepatitis, solely induced by the too powerful impression of the incomparable specific.

We have now arrived at the second part of the question above proposed: viz. in what manner do marsh miasmata contribute to the danger of intermittent fevers? or what is their action upon the organs?

These miasms also occasion continued affections of even the exterior mucous membranes. These affections are phlegmasiæ, as we can satisfy ourselves when they are visible, as in the conjunctiva or throat. Even when they are not, we possess a sufficient number of external signs to determine their nature; in fact, the catarrhal fevers caught in marshes are bronchites; the continued fevers there taken instead of intermittent, are nothing but acute gastro-enterites, perfectly similar to those which may be produced by changing an intermittent fever arising from the same source, into a continued one by means of cinchona and wine. The most simple observation then suffices to establish that marsh miasmata may irritate the surfaces of relation with which they come in contact, and thence transmit the irritation to the brain and to the whole nervous apparatus.

It is by this latter modification, perhaps also by the faculty which they may be supposed to possess of effecting in a short time the whole nervous system, that the most deleterious gases may be fatal in a few moments. Those of marshes, which produce only intermittent fevers, are far from having that degree of activity; but they have sufficient to affect the nervous power at its source, and to weaken the vital reäction in congestions, and often even to render it incompetent to relieve them. It is this which constitutes malignant fevers properly so called; and it must now be perceived that the warmer the countries are where

the marshes most abound which furnish these miasms, the more active these last must be; thus the fevers of the Pontine marshes are more promptly fatal than those of Zealand. But when the marshes are still more heated, the intermittence disappears; remittence only remains; it is also of short duration which comports with the greatest danger. Such have been several epidemic yellow fevers of the most marshy American plains; the ordinary physiognomy of this inflammation, is there so altered that it is difficult for the observer to distinguish it from the malignant fevers of the south of Europe; nevertheless the bodies of the victims of these degenerated typhus fevers have presented a phlegmasia of every region of the digestive apparatus.

It is then by irritation that marsh miasmata act in intermittent fevers, and if the nervous system is more particularly affected by it, this can only be from irritation, even when the nature of the nervous matter suffers from it. As to the therapeutic inductions to be drawn from it, these would most assuredly not be, that it is necessary at all risks to stimulate as soon and as actively as possible, the patients who have contracted fever in a very poisonous marsh, but rather that it is necessary to moderate the excess of the irritation by antiphlogistics, not to have recourse to the detraction of blood except with caution, and to prepare a part of the alimentary tube to receive the stimulation of the revulsives termed febrifuges, when there is a certainty that a direct sedative medication is insufficient.

The proposition indicates without specifying them, other external causes which possess the power of producing intermittent fevers, and especially of causing a relapse, by acting in the same manner as atmospheric vicissitudes. We have seen that these vicissitudes—alternatively produce congestions of blood in the visceral apparatus with augmentation of the internal secretions, and of the reäctions which heat the exterior of the body, by propelling there the fluid and opening all the cutaneous exhalants; it is not then surprising that fright, which causes tremors and oppression, the symptoms of spasms and of the concentration of fluids to the interior—that purgatives, which produce a determination of blood to the interior, and induce a flow of bilious and serous fluids to the surface of the mucous membrane of the diges-

tive tube, by cooling the cutaneous surface—that bleeding from the large vessels, which in persons already enfeebled, attract the blood towards the great viscera, at the expense of the external parts —are exciting causes of paroxysmal fevers, or induce a relapse when they have been some time cured. The organic action faithful to the laws which govern it, cannot fail to effectively reäct against the congestions excited by these different causes, and this double impulsion suffices to excite a first attack, in persons predisposed to it by atmospheric vicissitudes, and to determine a relapse in convalescents who always preserve for a long time the predisposition. One of my friends had such a predisposition for several years, so that whenever he bled himself or had leeches applied for the removal of cephalalgia or bronchitis, several paroxysms of fever recurred which yielded only to severe regimen.

On the other hand, does it not appear that it is by maintaining action on the external surface of the body, and preventing concentrations in the viscera by medicinal frictions, the application of sinapisms, alcoholic vapour baths, and even frictions with ice, that intermittent fevers are to be cured? In certain cases some surprise has been testified at these diseases yielding to mercurial frictions, and physicians have been tempted to suspect them of being syphilitic—let these experiments be repeated, and we are persuaded that a cure will be effected by dry frictions. All this success however supposes that the febrile habit is not kept up by a deeply-rooted internal irritation; but even were that the case, we should be certain of success, if we first removed it by antiphlogistics and regimen. This may be said without anticipating the therapeutics, and solely as a proof of the correctness of the physiological theory of intermittent fevers.

PROP. CCXXVIII.

The cause of the periodicity of certain pains and convulsions which repeatedly recur, is unknown.

This proposition refers to the neuroses which have been treated of in the commentaries on these diseases; but we intend to spe-

cially designate here, such of these neuroses, whether of the centre, as epilepsies—or of the nerves, as neuralgia, &c. which recur with perfect regularity and always at the same intervals, and which are sometimes treated by cinchona, like intermittent fevers. Not being able to add any thing to what is said in the proposition respecting the cause of this periodicity, we should have nothing to comment on except the appreciable condition of the organs which are the seat of these affections; but as that subject has been fully treated of in the commentaries relative to the neuroses, we cannot do better than refer our readers to them.

PROP. CCXXIX.

Rheumatism is a phlegmasia of the fibrous or synovial tissues, produced by atmospheric alternations of heat and cold; it is not therefore surprising that they should be often intermittent or periodical.

If their cause be a vibration of vital action analogous to that which occasions intermittent fevers, rheumatism may well present in its progress, something which connects it with those fevers. This is what the proposition appears at first to insinuate; but this disposition to intermittence in the irritation, results perhaps rather from the organization and temperament of the fibrous and synovial tissues. Inflammatory congestion cannot occur in these tissues without difficulty, and they are connected together by very active sympathies, arising from the nature of their nerves. In fact, all the nerves of relation are in pairs, and that on one side cannot suffer without the other being disposed to imitate it. This repetition of sufferings, is even observed in the different branches of the same nerve, as all those testify who have had inflammation in the ends of their fingers or in the nerves of their teeth. It is often very difficult to distinguish in odontalgia which is the affected tooth, or at least we cannot ascertain it from the account of the patient, that is, by the sensation, for the teeth in the neighbourhood of the one which is carious often appear more painful than the latter. Moreover,

the white tissues of the articulations and of the muscular masses, that is, the ligaments, the capsules, the aponeuroses, and the cellular tissues, which are closely united to the external surface of these membranes, resisting phlegmonous congestions, and readily communicating the irritation to one another, this irritation must necessarily assume the intermittent wandering character, and preserve it until the repetition of the irritating fluxions has overcome the resistance of these tissues, altered their temperament, and rendered them moist, instead of dry as they had previously been, and suitable for becoming habitually a centre of fluxion

Now let us see what observation teaches. Both muscular and arthritic rheumatism, consist at first of simple pains occasioned by the impression of cold on the skin, and these pains seem to shift their seat from one part to another of the locomotive apparatus; they afterwards assume a fluxionary character; but the fluxion is not constant, it readily changes from one place to another; finally, such of these points as have suffered most permanently, preserve both the engorgement and pain, and diffuse painful influences over the whole of the rest of the apparatus and even the viscera. Such is the most usual course—that of a moderate irritation of the white tissues of the locomotive apparatus; but there are some cases where the irritative impulsion is so powerful from the very commencement, that the tissues in question necessarily become congested. Then the disease no longer shifts its seat, it is permanent; and this may happen from the commencement, or not until after the irritation has alternatively affected several tissues, as is announced in one of the subsequent propositions.

The irritation which constitutes the basis of rheumatic affections, is nervous in its slightest grade, and, in that case, necessarily chronic. We have already shown the relations which connect it with what is called neuralgia. In a higher grade, rheumatic irritation is inflammatory: then it may be wandering, which constitutes the varieties termed gouty rheumatism or arthritis, and gout; or rather it is phlegmonous, which may happen in the intermuscular tissue and in the large articulations. Finally, the rheumatic irritation may become chronic with a permanent fluxionary condition, either in the aponeurotic and ligamentous

tissue, or in the articular and tendinous capsules; and it is this which produces the slow disorganization of the locomotive apparatus, true sub-inflammation which is described by authors under different names, but most commonly under that of chronic or atonic gout. It is termed rheumatic atrophy when it affects the limbs and leads to marasmus by rendering them incapable of motion, by excessively developing the cellular and areolar tissues, filled with lymph or degenerated fat. Besides, whatever may be the tissue in which it predominates, this disorganizing irritation is always accompanied with sympathetic pains, not only in the locomotive apparatus, but even in the viscera which it has more or less pervaded.

PROP. CCXXX.

Periodical articular phlegmasiæ become wandering by means of the sympathies, and terminate by crises, or else by fixing in some particular part, in an acute or chronic form, in the same way as visceral phlegmasiæ, when abandoned to themselves.

We have expressed in the preceding commentary our opinion respecting the sympathies of articular phlegmasiæ, and we have indicated the permanency mentioned in the present proposition. We now refer indeed to cases where, the irritation after successively affecting several points of the locomotive apparatus, fixes itself in a large joint or in an intermuscular tissue, and there definitely assumes a true phlegmonous form. The other crises which may terminate the disease and prevent its becoming so serious, are the perspiratory and urinary excretions; but they have no power of leading to a complete solution of the rheumatic phlegmasia, whether muscular or arthritic, when it has reached a high degree of intensity or has several times recurred. Cases of arthritis and gout which have not taken at first the phlegmonous form, which is always the most rare, become the more obstinate and more disposed to chronic permanency, very different from phlegmon, in proportion as the patients are more

advanced in age; and also in proportion to the freedom with which these diseases have been allowed to develope themselves; this is rendered sufficiently intelligible in the proposition.

PROP. CCXXXI.

Gout does not differ from arthritis except in circumstances attendant on the age or idiosyncrasy of the subject.

The character of gout is to commence by a *mono-arthritic* inflammatory irritation. This commencement does not take place before puberty; it occurs in individuals who are much predisposed to it, at the age of fifteen or eighteen years; but most commonly it does not make its appearance until towards the decline of life, in men who have indulged too freely in *eating and drinking*, and who are already affected with a chronic gastritis or duodenitis, with or without alteration of the substance of the liver. This has induced some physicians and especially *Scudamore* to believe, that the articular affection was dependent on the visceral disorder; but cases of gout occurring in adolescents and even in some adults without preëxisting gastric irritation forbids the admission of that explanation, and compels us to consider the gastro-duodenitis as a mere complication, which, nevertheless, does not prevent its exercising a great influence over articular irritation.

Arthritis is distinguished from gout by consisting in a simultaneous inflammation of several articulations. Commonly, the most sensible and those most remote from the centre, which are also those least protected from cold, are the first affected. The irritation always predominates in one of them, although it affects several, and it may be observed in various grades at the same time. Thus, it is often inflammatory in one or two articulations, and only nervous in several others, whilst the next day it may be exasperated to the degree of inflammation in these last, and the part in which it had yesterday existed in this state, is now affected with it only in the fluxionary form, which manifestly tends to sub-inflammation, and but too frequently assumes its characters. The influence of this phlegmasia upon the viscera is in direct proportion to the moveable irritation

which constitutes it, as is shown by the variations of the fever; of the respiration, of the appetite, of the strength of the limbs, of the sensation of uneasiness or of general fatigue, and the inequalities of the temper; phenomena which are always in proportion to the inflammation and to the sensibility of the articulation most affected.

As to the age, although we have already spoken of it, it is well to repeat that both forms of articular inflammation may occur at all ages, and in all kinds of persons; but that which depends purely and simply on cold is more common in youth, and is most commonly poly-arthritic, whilst that to which duodeno-hepatitis and irritation appears to have contributed, is generally mono-arthritic at its commencement, and is most frequently met with towards the decline of life.

PROP. CCXXXII.

The articular phlegmasiæ, when they become chronic, degenerate into sub-inflammations: hence arise nodes, concretions, &c.

Whether the articular inflammations were mono or poly-arthritic at their commencement, they always ultimately become, when they have been frequently repeated, very chronic sub-inflammations, and receive the name of gout. It would be useless to stop here to describe all the forms of degeneration which they induce in the articulations, whether in the cellular tissue which surrounds them, or in the ligaments connecting them together, or in the capsules, or even in the bones. We can say nothing new on that subject; we will only observe that those alterations should be referred to two general causes, which are the result of the inflammation and of the sub-inflammation. 1st. Vice of nutrition, which produces suppuration, caries, gelatinous, fibrous, and lardaceous tissues, and all the transformations of tissue. 2d. Extravasation, which gives rise to calcareous concretions, which are sometimes extracted from small inflammatory tumours, which appear around the articulations of old gouty subjects. Indeed, these species of free calculi must be distinguished from the ossi-

fications of the tissues which may be also met with in very chronic foci of sub-inflammation; for they do not form immediately in the living tissues, but in collections of albumino-gelatinous matter, a sort of unelaborated suppuration which the super-irritated white tissues have deposited in repeated attacks in the subcutaneous cellular tissue which covers the exterior of the ligaments, capsules, and tendinous insertions. This tissue is susceptible of a phlegmonous suppuration in the acute stage of rheumatic or gouty irritation, as is demonstrated by post mortem examinations; but in the chronic sub-inflammatory state, the lymph with which it is filled has none of the characters of pus; it forms collections, of which the more liquid part is absorbed, and the residue is entirely phosphate of lime with animal matter. Such is the origin of those calculi which are sometimes discharged from the small abscesses which they produce, by acting as foreign bodies upon the neighbouring tissues, and especially upon the skin, beneath which they are placed.

PROP. CCXXXIII.

The form of articular phlegmasia called gout, is often, but not always complicated with chronic gastro-enteritis, which modifies its progress, and invites irritation to the viscera.

Having necessarily treated of the complication of gastro-enteritis in the divisions and distinctions we have above made, it remains for us to speak here only of the influence of gastric irritations upon the retrocession of gout. This retrocession is readily conceivable, when we know that the vitality of the viscera is always greater than that of the exterior parts of the body, and the revulsion from the latter to the former much more readily takes place than in the opposite direction. It is not only to the stomach and intestines that gastritis may invite articular irritation; the heart, the lungs, and the head are so connected together that they communicate it to one another, or give it up with extreme facility. An accidental stimulation acts as exciting cause; so that

a gouty person affected with gastritis is liable, on exposure to cold, to an attack of pericarditis or pulmonary phlegmasia; to a cerebral congestion or encephalitis from a moral affection; not to speak of the inexplicable irregularities, nor the cases of nephritis and cystitis, which also produce a retrocession to the internal organs, and the more easily in proportion to the degree of derangement in the gastro-duodenal region in gouty subjects. But when these individuals are young, and full of vital energy, the articular affection seems, on the contrary, to form a crisis which at once delivers them from the sufferings caused by all these visceral irritations; but this crisis, without being, as is supposed, the necessary mode of solution of these internal diseases, is possible, and even frequent, so long as the viscera have not suffered any alteration in their structure. The practitioner should never lose sight of this.

PROP. CCXXXIV.

In gout the liver is affected only consecutively to the chronic gastro-enteritis which attends this disease.

This proposition is the pure and simple enunciation of a fact: it has the less need of commentary, as the question has been already fully considered. (See the commentaries on gastro-enteritis and on hepatitis.)

PROP. CCXXXV.

The irritation of gastro-enteritis is communicated to the articulations by means of sympathy, in the form of arthritis and gout; but this occurs, only when the articulations are predisposed to it by the influence of atmospheric vicissitudes, or some other external irritating cause.

Gout is a very rare disease in warm climates, though gastro-

enteritis and hepatitis are of very frequent occurrence there. This must lead to the belief, that articular phlegmasiæ are not the necessary crisis of gastric irritations. It cannot, however, be denied that there is a very close sympathy between the gastric passages and the articulations: the pains in the limbs which accompany the commencement of acute gastritis, daily afford proofs of this, and we know that the organs which sympathize with others often divert the pain from the latter to the former. The possibility of the revulsion of a phlegmasia of the gastric passages, by the explosion of an articular phlegmasia, cannot then be denied; we have seen several instances of it. However, we do not think that these cases of retrocedent arthritis, such as Hippocrates appears to have met with, can be of frequent occurrence or affect the course of gout, as observed in cold or temperate climates. Moreover, we think, not to prejudge the results of experience, that it is better to modify the proposition by inserting the word *generally*. We propose then that it shall read as follows:—"*The irritation of gastro-enteritis is communicated to the articulations by means of sympathy, in the form of arthritis and gout; but this generally occurs only when the articulations are predisposed to it by the influence of atmospheric vicissitudes, or some other external irritating cause.*"

PROP. CCXXXVI.

The irritation of articular phlegmasia is propagated by sympathy to the stomach, and sometimes becomes predominant there.

Such is the reciprocity of sympathetic influences. Those cases are here referred to in which the stomach being healthy, an arthritis induced in one or several articulations by the action of cold, disappears to give place to acute gastro-enteritis. We have collected several examples of these kinds of retrocessions, and we regard them as analogous to those of pleurisy, of pneumonia, and of pericarditis, equally preceded by irritations of the locomotive

apparatus. These phenomena are not peculiar to gout; they serve solely to elucidate its course in some cases.

PROP. CCXXXVII.

The multiplied infirmities by which the aged subjects of gout are tormented, (the gouty diathesis and cacochymia,) are sympathies of the stomach, of the brain, &c. which have increased and become transformed into phlegmasiæ, neuroses or sub-inflammations; or else these phlegmasiæ, &c. are primary.

In fact, when the visceral irritations of old gouty persons have not preceded the gout, they are produced by it, unless some accidental causes, as poisoning, or external violence should have intervened subsequent to the appearance of the articular affection. What is certain, is, that gout produces visceral irritations at first by transmitting the irritation to the visceral apparatus through the medium of the brain and nerves. They may be inflammatory from the commencement in predisposed subjects, as we have sufficiently demonstrated; but most commonly they commence by being purely nervous, or at least they do not alter the circulation and the visceral secretions except in a slight degree, which does not prevent the return of equilibrium when the cause, that is, the external exciting irritation, has ceased to act. But in old age, the congestions produced by these nervous visceral irritations are no longer resolved, and the chronic phlegmasiæ and sub-inflammations remain permanent in the viscera; the patients who have become insensibly accustomed to them, bear them without increased inconvenience; these patients are even sufficiently nourished and preserve their *embonpoint*, although the alimentary mucous membrane is disorganized in more points than one—although the tissue of the liver may have become incapable of forming normal bile—the heart hypertrophied, and the vascular system the seat of a sub-inflammatory irritation which tends to obliterate it and to deteriorate all the secretory functions as well as the nutritive assimilation. Reduced to this sad state,

gouty persons are extremely frail, their life is prolonged only by care; the slightest moral or physical perturbation causes them an increase of evil; sometimes they suffer from catarrh; sometimes from cystitis, or an attack of calculous nephritis; sometimes the stomach becomes incapable of digestion, or the bile suddenly becoming superabundant and depraved, acts as a foreign body which torments that viscus and the alimentary canal; the brain, the centre of convergence of all the different modes of irritation, menances to stop its functions; and the presentiment which the patients have of it, cannot but add much to their habitual moroseness. Such is a too brief sketch of the evils which were formerly charged to the account of a supposed gouty humour, gradually accumulated in the different fluids and tissues of the system. But it is at present perfectly clear that they can only be attributed to irritation of the viscera; and that other super-irritated old persons are as often its victims as the old gouty, if they do not early take the necessary hygienic precautions to preserve themselves from it. Finally, the moment arrives when the functions can no longer be performed, and the symptoms which immediately precede death, as the congestion of blood in the head, in the heart and in the lungs, are attributed to *retrocedent gout*, whilst generally the brain, wholly devoted to the stimulations of the principal viscera, has for several days ceased to be sensible of the customary articular irritations.

PROP. CCXXXVIII.

In chronic and repeated articular phlegmasiæ, the irritation always proceeds from the circumference towards the centre, but this is also the case with all other inflammations of the periphery.

This proposition expresses a generally observed fact. Our only object here, is to recal and connect with gout, what has been said of all the irritations of secondary organs. None of them alone can induce death; but it is a law of the economy that irritation shall be transmitted by the nerves to the whole system,

and that the principal viscera after having repeatedly repelled, should ultimately preserve it, and yield to the consequences of it. Age, the repetition of sufferings, the debility which results from pain, convulsions and means which have been thought necessary for their cure, must necessarily diminish the force of resistance of the visceral apparatus: hence the reason why an internal specific which had several times succeeded in the treatment of herpes, syphilis, gout or rheumatism, becomes unexpectedly a promptly fatal poison in the hands of a physician who does not know how to calculate the degree of vitality, that is, who is not a physiologist. These reflexions show the degree of importance of the present proposition.

PROP. CCXXXIX.

The transformation of gout into another disease is nothing more than the displacement of the principal point of irritation, which produces effects having a relation to the structure and vitality of the different tissues it occupies.

This transformation occurs only when the articular irritation is not yet inveterate, and has not denaturalized the tissues which it attacks; for if it were otherwise, the case would be one of those mentioned in the commentary to Prop. CCXXXVII.

As the transfer or displacement of irritation only is referred to here, a subject of which we have repeatedly spoken, we think that we may dispense with all commentary.

PROP. CCXL.

It is absurd to give the appellation of gout to an affection which has not been preceded by articular inflammation; it is as much so to give this name to the articular phlegmasia, which has been preceded by gout: for to say that the gout has been transferred to the brain, when mania supervenes to an articular inflammation, is as much

as to affirm, that mania is transported to the great toe, when gout replaces an attack of delirium.

This proposition exhibits the absurdity of the old terms, and of the ontology of the ancient physicians. It is sufficient for one of well organized mind to reflect on this subject, in order to perceive the whole importance of the doctrine of irritation, and to remain perfectly convinced that we could not practise medicine without having recourse to the idea we attach to that word. What in fact is it, that is displaced in the cases cited? Is it the gout? But if the gout has not existed, how can it be determined to the head, to the lungs, or to the stomach? Besides, if it be considered as a disease of the articulations, it is absurd to say, that an articular affection, which has not existed, is transferred to an organ. But even if it had existed, it would be as absurd to suppose it to have undergone such a metastasis, for what is an articular affection in the head, in the lungs, &c.? Is it meant to refer to a humour formed in the body, and destined to produce gout? A humour which, most frequently, first seeks the articulations, to be thence transferred to the viscera; but which can, in certain cases, be determined to these last before having visited a single articulation? This humour is an hypothetical substance, the existence of which cannot be demonstrated by any anatomical or chemical process. What the ancients called the gouty humour, is nothing but the lymphatic matter, more or less resembling pus, which we find in the articular tissues, after irritation has, for some time, prevailed there; the calcareous molecules, which are sometimes collected in this extravasated humour, are not the cause, but the product of gout, as we have already demonstrated; and it is neither these, nor the humour from which they are produced, that is transferred to another organ to establish a gouty affection in it.

What proof is there that such a humour is formed in the blood by the imperfection of depuration, or that it is detached from the bones by an acid? Is the mind satisfied with the hypothetical enunciation, that there is an earthy matter accumulated in the blood by the weakness of transpiration, and of which the smallest articulations, those furthest from the centre of the system, are

the parts where those eliminations naturally take place? Has any one ever felt the conviction, that when such a humour has not found the articulations prepared to receive it, that it transferred itself to the viscera?... It will be replied, that the humeral theories are abandoned, and that consequently our reproaches no longer apply to living authors... We do not think so; for if living authors do not consider the humours to be tranferred from one part to another, they must necessarily consider the entities which they substitute for them, as being thus transported. Now, these entities are either vaguely designated articular affections, or articular nervous entities, or phlegmasiæ, either sanguineous or lymphatic, but always articular; or finally, if they agree with Scudamore, a special inflammatory entity, which is formed in the tissue of the liver, and is in a great measure owing to a peculiar degeneration of the secretion of this glandular apparatus. We now ask whether it be possible for any one to permit his mind to dwell on such hypotheses? Is it not a romance to consider gout, conceived in one of these modes, as an entity which travels? But if we abstract all explanation, and view in our mind's eye only the entity *gout*, in travelling through the system, take up its residence in the brain, it will be the same intellectual operation as to lodge the entity *mania* in the great toe. Indeed, gout represents to the mind a kind of pain, a perception like that of a drop of boiling water falling on an inflamed joint; and mania represents an aberration of judgment. Make an abstraction of the proximate causes of these two nervous phenomena, and what will remain? The name. Imagine causes which are not proved, which are improbable, and what have you? Hypotheses. Choose then between hypothetical entities moving through the living organs, that is, chimeras, and an empty name—the idea of a sound without meaning.

To the point; it is evident that all that is common to the regular paroxysms of gout, and the affections of the viscera, which may alternate with them, is the phenomena of irritation solely. It is possible to demonstrate that this phenomenon is developed in the different tissues in a way conformable to the vitality of the patient, to that of the different organs where it manifests itself, and to the activity of the exciting and auxiliary causes; to

the action of all its modifiers, in short, in whatever manner they may act. Now, this is what it is necessary to study, in collecting and comparing a great number of facts, instead of satisfying one's self with expressions which represent only entities and hypothetical phenomena; the object of the proposition is solely to point out to practitioners this new road to knowledge.

PROP. CCXLI.

In retrocessions of gout, it is of no other use to be mindful of the original seat of the irritation, except to be able to determine the parts of the periphery, to which it is best to recall the disease by revulsion.

This proposition, apparently therapeutic, is only a proof in support of the truths announced in the preceding one. Indeed, if there be no need of paying any regard to the words by which the sufferings of the organs are designated, but only to the vital modifications which these words recall to the mind, it is evident that the retrocession of gout should not be considered as any thing else than an internal irritation, which has been substituted for an external one.

If the question be only in relation to that, and not to a putrid, or malignant, or coagulating, or dissolving, or eroding, or debilitating matter, the correctives of which it is absolutely necessary to seek in the vials of the apothecary, it is evident that two indications present themselves; 1st, that of treating the internal irritation by the direct application of demulcents, in place of the irritants designated by the ancients under the name of specifics; 2d, that of indirectly combating this irritation by revulsive measures; and as it is probable that the external organ which had been first irritated, will be the most disposed to become so—to act upon that organ in preference to any other, for the purpose of establishing the desired revulsion. Let us remark, in concluding, that this mode of establishing the indications succeeds in uniting gout with all the other irritative affections.

PROP. CCXLII.

Revulsion can be effected in what is called misplaced gout, only when the organ attacked has not suffered disorganization.

It is by examining the organs of an individual, who has succumbed to an internal inflammation resulting from the retrocession of gout, that we acquire the conviction, that irritation is the sole phenomenon worthy of being observed in the displacements and fixations of the pretended entity gout. An ignorant person will expect to find in the lungs of a subject who has died from retrocedent gout, something that resembles the affection of the thumb, or of the great toe; he will find there only the traces of a common peripneumonia. It will be the same with all the other organs; each of them will be affected according to its organization, and the intensity of the irritation, from which it has suffered at different periods of life; and each of the modes of alteration which will be observed there, may be found in subjects who have never suffered from gout; it will be enough that they should have had irritation in the same tissue, and in the same grade as the subjects who have been the victims of gout.

It results from these reflexions, that the proposition under consideration, expresses only a fact applicable to all possible irritations, and that to say the revulsion of retrocedent gout can no longer be effected, when the principal tissues of the affected organ are altered, is simply to say, that irritation can no longer be relieved in a tissue whose organization it has deteriorated; a truth which is not less applicable to the primary irritations of all our tissues, than to those which are developed in them consecutively to the affection of other tissues. It is thus, that all the axioms of the physiological doctrine enter one into the other, and resolve themselves, as respects active diseases, into irritation, the laws of which are the principal object of the studies of the physician.

PROP. CCXLIII.

The acrid vegetable substances, which, in small doses, are emetic, purgative, drastic, diuretic, &c. when given in large doses, excite inflammation and ulceration in the digestive mucous membrane, and secondarily pains and convulsions, which differ according to the idiosyncrasy of the subject.

The object is to show that poisonings are governed by physiological laws, like other pathological states, which had not previously been done, and to remove them from the *indeterminate class*, where nosologists had provisionarily placed them, without any order, with some diseases, in relation to which no more definite ideas were entertained. The author has commenced that undertaking in the present proposition, in showing that the specific character of emetics and purgatives is merely stimulation, which terminates in an inflammation of the mucous membrane of the alimentary canal, with colic, that is, painful convulsive contractions of the muscular fibres of this canal, and subsequently those of the respiratory and locomotive muscles.

PROP. CCXLIV.

Vegetable astringents in small doses, produce gastro-enteritis when taken in large doses.

Here the primary modification is very different. Instead of increasing the secretory and peristaltic action of the alimentary canal, the modifiers termed astringents, diminish both. But what proves that this diminution is not a purely passive phenomenon is, that when the same modifiers act in large doses, a true inflammation results, more or less similar to that produced by vegetable purgatives: hence the conclusion is natural, that inflammations of any degree of intensity cannot be unattended with

danger when treated by an astringent medication, whilst excess of local irritability is equivalent to the excess of the dose of the medicament. This truth is of extreme importance, since it is from it that the principal rules for the treatment of cutaneous phlegmasiæ, those of the openings of the mucous membranes, and all internal irritations accompanied with discharges, must be drawn.

PROP. CCXLV.

Narcotic vegetables and alcoholic substances, in a large dose excite gastro-enteritis, at first without ulceration, and engorge the brain with blood accompanied with convulsions and delirium. They also produce engorgement of the lungs.

Much has been written respecting the effects of narcotics, and little is known on the subject, although these medicaments are of all the articles of the materia medica, those most frequently used, and consequently are those respecting the action of which we should have the greatest number of data. The primary action of narcotics is certainly stimulating, as well as that of alcohol, but in a peculiar manner. This should not astonish us, since every modifier has its peculiar mode of stimulation. It is enough for us to be sure that the vital phenomena are at first exalted by the action of these substances, and it is impossible for us to doubt this. The point to be determined is how this exaltation differs from every other, not essentially, for that would be a silly question, but to determine what distinguishes it to our senses from those with which we may compare it. It is certain, that when taken in moderate doses its first effect is to produce agreeable sensations, and that it increases innervation; that this modification first takes place in the nervous apparatus to which the foreign body is applied, and that it is repeated in the brain, whence results a change which causes the disappearance, or which at least diminishes for a time the painful sensations which may afflict us; that to this primary excitation another state succeeds, accompanied with drowsiness, and manifested by an increase in the

size and force of the pulsations of the heart, with increased cutaneous exhalation; finally, that after both kinds of excitation, a contrary state supervenes, marked by the diminution of irritability and sensibility. This is the modification best known to the physician, that to which he most frequently resorts, as a remedy in painful diseases. Is it then so difficult to conclude that given in large doses, narcotics so increase nervous action as to exhaust it in a short time; that if they do not produce this effect, they will excite the innervation for a somewhat longer period, which will act on the brain producing fantastic delirium, and on the nerves, inducing convulsions, some of which, those of the alimentary canal for instance, will expel the poison; that if they do not extinguish the powers of life by this excess of innervation of the sensitive and locomotive apparatus, they will produce, by their consecutive excitation of the vascular system, sanguineous engorgements, during the duration of which consecutive nervous torpor and death of the engorged capillaries will suddenly take place; that this modification will manifest itself by gangrene either in the stomach or in the wound to which the narcotic shall have been applied; in the lungs by engorgement productive of dyspnœa; in the brain by violent apoplexy, during which the abatement of innervation will be marked by that of the pulse and of respiration, the cessation of which must necessarily be the extinction of life? Is it not natural that, in the bodies of persons poisoned by narcotics, when death occurs suddenly from the action of these articles on the nerves, no trace of phlegmasia or sanguineous engorgement should be found? that when it shall have been protracted, we should find in the mucous membranes, and in all the visceral apparatus, sanguineous congestions with a black or at least brown colour, on account of the diminution of the phenomenon of oxygenation, always proportional to that of the innervation? Ought we not also to expect that the irritability of the muscular fibres of animals who have been poisoned by narcotics, should be destroyed? Now what we would deduce from the phenomena of a slight narcotism is precisely what we observe in all cases of considerable narcotism, whether absolute or relative; absolute, that is sufficiently intelligible; relative, that is to say,

when we administer narcotics, even in small doses, to persons who are labouring under an inflammatory disposition.

Why then still dispute respecting the effects of opium and its congeners? We must be content with repeating observations, to satisfy ourselves that all the circumstances have been correctly noted, to familiarize ourselves with the differences of action which distinguish each of the narcotic poisons; but all explanation as to the first causes of their action must be forever abandoned.

PROP. CCXLVI.

The acrid vegetables, called antiscorbutic, excite, in a large dose, gastro-enteritis.

This modification should be remembered, whenever we are about prescribing these articles to any patients.

PROP. CCXLVII.

Corrosive or escharotic mineral substances produce, in a small dose, gastro-enteritis without an eschar, and consecutively ulceration: in a large dose they develope this inflammation around the eschar which they have produced. In all cases, phenomena of delirium and convulsions result, which exhibit many varieties.

All these substances are indeed actively stimulating, and the excess of irritation which they transmit to the brain, by acting on the extremities of the nerves, may readily, by the aid of a plethoric disposition or of an obstacle to the course of the blood, produce phenomena somewhat similar to those from poisoning with narcotics.

PROP. CCXLVIII.

If arsenic be not promptly fatal, it produces inflammation of the gastric passages varying in degree according to the dose and the idiosyncrasy of the patient: hence result engorgement and inflammation of the brain and lungs, and sometimes phenomena analogous to those of pretended putrid and typhus fevers.

In the commencement of this proposition, the cases of death from swallowing a large dose of arsenic, in which no trace of inflammation of the stomach has been found, are indicated. These facts prove that the arsenical preparations exercise a deleterious stimulant action on the nervous substance of the stomach, which precedes the rubefacient, escharotic and inflammatory action, and that this stimulation may be communicated to the brain, and diffused through the whole nervous apparatus, the vitality of which it destroys. The reäction which produces the phlegmasia next follows, but time is wanting for it to develope itself, therefore it does not appear when large doses of poisons have been taken, and when they have produced their whole effect it is still complicated with the nervous modification. This renders phlegmasia produced by arsenic much more deleterious than that produced by simple escharotics.

It is this general action upon the nervous system which renders the internal administration of arsenic so dangerous in diseases, and which prevents our being able always to trust to it, even when only topically applied, as is proved by the gastritis, pneumonia, and encephalitis which frequently follow the application of arsenical ointment to the ulcers named chancrous, &c. The excitement of the brain and of the whole nervous matter of the viscera produced by arsenic, always terminates in a gangrenous disposition, which manifests itself even in accidental phlegmasiæ, so that we never obtain a perfectly complete solution of internal inflammations and sub-inflammations, in persons who have long used arsenical preparations: nutrition is imper-

fectly performed in them, they are without colour, and die of gastro-enteritis, (in which the mucous membrane is brown,) with disorganization of the liver, dropsy, diarrhœa, &c. The degree to which the inflammatory or sub-inflammatory alteration of the vascular system may be carried has not been ascertained.

If the symptoms of febrile debility are in proportion to the excess of the inflammation of the viscera, especially the digestive, it is conceivable that they cannot fail to develope themselves to a high degree, in acute gastro-enteritis produced by arsenic, like the scurvy produced in gastritis, enteritis and colitis by the same cause.

The brown eruptions, ecchymosis, and red and violet-coloured turgescence, which are observed in the skin of persons who die from poisoning with arsenic, by proving the diffusible action of this deleterious metal, leads to the belief that it seriously implicates the vascular system, in affecting the whole nervous system. New investigations are required on this subject.

PROP. CCXLIX.

The preparations of lead produce in small doses astriction of the gastro-intestinal mucous membrane, painful convulsions in the muscular coats of the digestive canal, whence result colic, vomiting, and, sympathetically, convulsions of the limbs; but in a large dose, or from the individual disposition, they produce gastro-enteritis more or less associated with a convulsive state. Hence arise the great differences, in the effects of emetics, drastics, opium and sudorifics which are employed in the treatment of colic produced by lead.

The astringent action of lead is demonstrated by the paleness and the diminution of secretion of the external surfaces of the body to which saturnine preparations are applied. Hence, the drying property which is ascribed to these medicaments, and which cannot be denied to them, when they are applied to wounds,

external suppurating surfaces, and phlegmasiæ of the openings of the mucous membranes, and whenever the inflammation is not intense. But if the salts of lead are applied to a tissue in which there is considerable inflammatory heat and pain, far from producing the effect indicated they produce an entirely different one;—the local heat and the sensibility appear augmented, and are repeated with more intensity in the visceral apparatus. Sometimes we observe a combination or rather a succession of these two effects;—a suppurating wound is attended with heat and slight red tumefaction; acetate of lead is applied to it, the redness and heat appear to cease, the wound becomes dry, loses its sensibility, and is covered with a scab beneath which it is supposed that the cicatrizing process is going on; but a sensation of tension, of heat, and pulsation soon undeceives the observer; —inflammation is revived under the covering produced by the action of the saturnine salt; a collection of acrid pus is formed there, and requires again the employment of emollients to produce cicatrization.

Introduce now the salts of lead into the gastric passages, and what will happen? If only a small dose be given, and there is no excess of irritability and of heat in the mucous surface, they will diminish the secretions, which assist digestion, which will produce constipation, and sympathetically dryness of the mouth, the suppression of the bronchial excretions, and of the perspiration, and will render the circulation of blood slower. Such is the astringent effect; and the vascular parietes, and the muscular fasciculi of the alimentary canal, and of the heart, participate in it. Innervation then appears to be lessened by the influence of lead. There is, however, a moment of stimulation, when the substance acts upon the nervous matter. This is accurately distinguished by the degustation; but that moment, which is of very short duration, is suddenly replaced by that of sedation, which can only be attributed to a state of contraction, which, if not permanent, is at least more prolonged than that of the normal state, and the necessary effect of which is the diminution of the sensibility, with that of the calibre of the vessels, and of all the phenomena of circulation, of secretion, and of excretion in the part which has been touched by the lead. Such is the immediate

local effect; but as the nerves convey all the modifications which are experienced in the parts to which their extremities are distributed, modifications which are primarily that of the nervous matter, the abatement of innervation, and the constriction are repeated to a greater or less extent over the whole living system.

Such is the sedative effect of lead, that which is wanted when it is administered for the cure of vomiting, diarrhœa, excessive sweats, profuse expectoration, diabetes, and hæmorrhages; but this effect, which is produced at the second period of its action, which appeared to be, and which we ourselves thought was the first, can neither be permanent, nor rendered useful, as a means of cure, except when the excretory irritation, for the cure of which it is administered, is not connected either with an active inflammatory impulsion, or the disorganization of an organ of great importance. In the first case, sedation does not take place, the primary action of the modifier becomes the only one; it acts violently, and there is only an aggravation of the phlegmasia; in the second case, if the same thing does not happen, the secondary effect is followed by reäction, and the excitation which it had calmed, is rendered more intense than before, and the medicament is more injurious than beneficial. This should be known to those who do not fear to administer preparations of lead in phthisis pulmonalis, and in chronic phlegmasia of the digestive canal.

Having now treated of the general effects of lead, it remains for us to consider it as specially acting upon this same canal. The first effect of reäction, which strikes us, is the sensation of colic; it announces that the lead acts no longer as a sedative, but rather as an irritant to the nervous matter of the internal membrane of the alimentary canal. The disease is still more nervous than inflammatory, or rather it is a nervoso-sanguineous irritation of the mucous membrane, which is propagated to the muscular, which it forces to convulsive contractions, and to the whole abdominal and pelvic nervous system, in which it causes acute pain. But this irritation persists, it increases; in place of tending to render the membrane paler and dry, it injects it with blood, and causes an afflux of serosity and bile to it, as is proved by the vomiting, and sometimes even diarrhœa, which occurs. Arrived at this stage, the modification produced by the lead is a true in-

flammation, the principal seat of which never changes, but remains where it was at the first effect of the poison, in the mucous membrane of the digestive tube. Thus the muscular membrane, the muscles of the lower limbs, and the joints, suffer solely in consequence of the propagation of the irritative action which exists in the nervous matter of this membrane, which, from thence, diffuses itself through the nerves of the abdomen, into those of the muscles of the pelvis, thighs, legs, feet, and their articulations, and sometimes, but much less frequently, into those of the arm, and articulations of the hands. We know that these pains may paralyze the limbs, and produce nodes in them; but is this not to say, that the irritation which exists in the nerves denaturalizes the pulpy matter contained in their neurilema, and induces congestions in the serous and synovial capillaries, with which this matter is in communication? Why should we be more astonished at these results than at the paralysis of a nerve long harassed by rheumatic irritation, and at the alteration in the circulation and secretion which we perceive in the eyes, and in the lachrymal glands, in the salivary glands, in the cellular tissue which surrounds them, and in the vascular net-work of the face, in persons attacked with neuralgia? Is it not always the phenomenon of irritation traversing the nervous tissue, and deranging the circulation, the excretions, and the nutrition, by morbid erections, which it excites in all the capillary tissues, to which the nerves have carried it? Finally, since it is necessary to say it, are not these phenomena of the same nature as all the innervations which constitute the synergy* of the organs in the most perfect health, or rather are they not really the conversion of normal excitation into irritation?

The proposition should now be understood when it asserts that the disposition of individuals and the dose of the saturnine poison explain the varieties which are observed in the effects of emetics, drastics, and the other stimulants with which we attempt to cure lead colic. If the nervoso-sanguineous irritation of the membrane be slight, stimulants dissipate it, either by secretory revulsion and by the stimulation of the heart and of the whole visceral and locomotive muscular apparatus, or by the narcotic modification,

* Healthy sympathy.

the explanation of which we have already given. Has this irritation become intense, has it assumed a decidedly, that is, predominantly, inflammatory character, the new stimulation not being able to destroy the old, never fails to increase it, for this is a law to which there is no exception, and the means which should have saved, only destroy. Thus all pathological subjects bring us back to a single principle, the necessity of unceasingly observing and studying irritability and its relations with the modifiers of our organs.

PROP. CCL.

The mineral astringents, the sulphate of alumine, of zinc, and of iron, act nearly in the same manner as the preparations of lead.

We will not here examine how far what has just been said relative to the preparations of lead, is applicable to other astringent substances; we believe that the lead is the most dangerous of all, and that it produces a truly deleterious effect on the nervous system. But we are persuaded that there is really some relation between the modes of action of the modifiers mentioned in the proposition; the primary action of all is stimulating; they all contract the fibres, and afterwards diminish the innervation. It remains to be determined by observation, how far each of them can produce both effects, and to make known the duration of these effects and the dispositions of the body in which they are most marked; finally, to teach us, which among the substances of opposite effects, those which in cases of gastro-intestinal irritation induced by astringents, appear to be most suitable to each of them.

PROP. CCLI.

Corrosive sublimate, in a little too large a dose, inflames the gastric passages; in an excessive dose it produces ulceration, phlogosis, and determines various pains and

convulsions in the gastric passages and in the muscles of relation.

There is nothing peculiar to be observed respecting the corrosive sublimate, except that it is the cause of many cases of chronic gastritis and hypochondria in persons who have taken it for the cure of syphilitic affections. It does not act upon the lungs nor become a cause of phthisis except as a sequel of this first irritation, an observation which we published several years ago in the *History of Chronic Phlegmasiæ.*

PROP. CCLII.

All the preparations of mercury and copper are excitants, and their excessive action always produces gastro-enteritis.

It is certain that all the mercurial preparations, without speaking of the corrosive sublimate, are exciting; but it is equally true that they are so in a mode peculiar to themselves, and their effects on the economy are such as we in vain endeavour to obtain from other substances.

The action of mercurials was formerly represented as a sort of dissolution of the globules of the blood, and especially of the lymph. If this modification, which might be considered as a diminution of the vital affinities, did really occur, it would always be preceded by a stimulation, for certain phenomena are present which do not permit this to be called in question. These phenomena are at first the augmentation of sensibility, that of the circulation of the fluids in the part upon which the mercury acts, and afterwards in the whole sanguineous system; finally, that of the evacuations which are more or less considerable, and which are always copious in cases of salivation. Indeed, this salivation, viewed as such an evil by the ancients, who regarded only the humoral evacuation, is itself the most striking proof of the exciting powers of mercury, since it is nothing else than an inflammation of the mucous membrane of the mouth, the product of

which is the increased secretion of mucous from the diseased part and of saliva from the corresponding salivary glands. This is what we may deduce from the laws observed by Bichat relative to the sympathetic excitation of the secretory organs, by the direct excitation of their excretory orifices. As to the alteration, which the mixed fluids produced by the mercurial gengivitis, appear to undergo, it may be observed that it is always in proportion to the intensity of that inflammation. But the irritating action of mercury is not limited to the buccal mucous membrane and its annexes; it also acts upon the whole mucous membrane of digestion, and consecutively upon the secretory organs connected with it, and even upon all the other membranes of the same order. It also renders the tongue foul, the breath fetid, the appetite greater than natural, when its action is directed upon the stomach; whilst whenever it is made to act upon the intestines, it occasions profuse diarrhœa.

It is by this stimulation, which is always very considerable, of the principal membrane of the digestive tube, that mercury disturbs the whole economy, alters the condition of the skin, that of the openings of the mucous membranes, or of the external senses, and even that of the most inactive white tissues, as the periosteum, the cartilages, and the bones. It would be difficult to find, or rather there has not yet been discovered any other modifier whose action is so great and so general, with such little danger, at least pressing; it is this which gives it the precedence over all other revulsives in obstinate chronic irritations of the most inactive tissues. Several nations have found this general alteration of the functions without alarming perturbating commotion, so convenient, that they employ mercury, especially that preparation of it which acts as a purgative, as a species of universal remedy, restricting themselves to moderate the excitement which it may produce, by the more or less copious detraction of blood. Other stimulants may, perhaps, produce as general an excitement, but this would always be attended with more danger; the nervoso-sanguineous apparatus of the epigastric region, would suffer more in perturbating all the tissues of the body, from the stimulation of any other medicinal stimulant, than it would from the stimulation of mercurials.

However, this latter is, in our opinion, much less innocent than is generally thought by the ontological sects. Mercury partakes with all the stimulating minerals, the property of diminishing the assimilating power of the internal membrane of the digestive tube, after having produced there a certain degree of irritation; it is thus, we would say, by a species of consecutive chronic inflammation, that it becomes the cause of the scorbutic affections, of cacochymia, and dropsies, which are met with in all men who have used to excess these various preparations. There are then two species of mercurial poisoning; one is acute, and which confounds itself with all acute phlegmasiæ; the other is chronic, and under this latter form, which constitutes a part of the so numerous class of chronic and latent phlegmasiæ, it is usually accompanied with a derangement of assimilation and nutrition, which rarely permits a radical cure to be attained. We do not, on that account, desire to banish mercurials from the treatment of syphilitic affections, which have been in vain treated with antiphlogistics and diet, especially in patients who are not able to trust to time and privations for that kind of cure; but we say that it is necessary in these cases to begin by insisting as long as possible on an abstemious and depletory regimen, and never to persist long in a course of mercurial stimulation; resorted to before the destruction of the venereal phlogosis, this last may be kept up in its original seat, and spread to other parts. It is thus, that pains in the bones and exostosis, are often the result of mercurial gastritis, and in these cases they are produced like the pains and nodes from poisoning with lead: mercurial stimulation continued with a blind obstinacy is still more dangerous, since it may seriously and incurably injure the assimilative and nutritive functions.

As respects the preparations of copper, we believe, from experience, that their use is very dangerous; but after what we have said respecting the other minerals, we may dispense with offering any remarks here in relation to them.

PROP. CCLIII.

Cantharides occasion gastro-enteritis, and at the same time phlegmasia of the urinary organs.

This proposition requires no commentary.

PROP. CCLIV.

Putrid flesh which the stomach cannot assimilate, produces gastro-enteritis, with irritation and engorgement of the brain, and gives rise to the symptoms of typhus by the intensity of the nervous phenomena; but ulceration does not supervene except consecutively and after a certain duration of the inflammation.

PROP. CCLV.

Spoiled fish and poisonous mushrooms, produce gastro-enteritis with great anxiety, meteorism, colic, &c. imitating the phenomena of typhus, and often of cutaneous inflammations: the delirium and convulsions, (in which tremors and subsultus tendinum must always be included,) are here, at least as considerable as in poisoning by putrid flesh.

These two propositions are so clear and precise, that they really require no commentary; for the explanation of the symptoms, it is sufficient to refer to the explanations which have been already given, of gastro-enteritis produced by the most common causes, and to add, that in the cases referred to in the proposition, the danger is still greater, as the agent which excites the phlegmasia is more active and really poisonous.

It is absolutely necessary to give here with these two propo-

sitions, some of those belonging to the section of therapeutics, to which there will be no commentaries, at least immediately after the pathology; because these propositions are the only ones which treat of miasmatic poisoning, and which arrange it with acute gastro-enteritis. We perceived too late, that the subject of typhus had been omitted in the propositions on pathology, and we introduced it in the section on therapeutics. These propositions are the following:—

CCCXVII. *Typhus fever being a gastro-enteritis produced by miasmatic poison, that is, by putrid emanations, and often complicated with some other inflammation, and especially with that of the cerebro-spinal apparatus, may be arrested by the treatment proper for these diseases, when they are treated in their incipient stage.*

CCCXIX. *The excessive exaltation of vital phenomena is the most powerful cause of their diminution, and heat is the agent best adapted to produce this exaltation: hence it is that the typhus fevers of warm climates (where, moreover, the putrid exhalations are most active) are more dangerous than any others, and destroy robust more readily than weak persons. It may be hence justly concluded, that cold applications are more efficacious than repeated bleedings, which last are, however, very useful in these diseases; but cold should be employed at the commencement of these fevers, immediately after bleeding, and applied to the interior as well as to the exterior.*

We have derived, not from authors, but from observation, the idea of connecting together, common gastro-enteritis, poisoning from putrid matters introduced into the gastric passages, and those occasioned by the inspiration and deglutition of gases given off by these same substances. Physicians had constantly restricted themselves to describing groups of symptoms arising from each of these sources, without attempting to give a physiological explanation of them. Far from attempting to elucidate them by comparisons, they strove to distinguish them, one from another, and multiplied entities, which were constantly confounded together notwithstanding the efforts of innovators. As the therapeutic modifications could not be adjusted to this multiplication, which

had no real foundation, the science advanced more and more towards perfect confusion, when we proclaimed, that groups of symptoms must be no longer depended on for the establishment of philosophical nosographies; but that they must be founded upon the primary irritation of each organ, and upon the secondary irritations, which result from it. Now, it was by observing, according to this plan, that we found that acute inflammation of the gastro-intestinal mucous membrane is the basis of all the fevers termed idiopathic, that is, of the fevers which were supposed to exist independent of the inflammation of any organ; that if certain cases of poisoning have any resemblance to these supposed fevers, it is because the seat of the principal point of irritation is constantly the same; that the foul air which is not sufficiently active to cause sudden death, developes a true gastro-enteritis; that the cerebral substance is always violently irritated in cases of gastro-enteritis, whatever agent may have produced that phlegmasia; that this substance, as well as its envelopes, have a tendency to become inflamed, and indeed are often inflamed in these very cases, and that the degree of this irritation alone decides the number and intensity of the nervous phenomena, which so greatly vary the physiognomy of what are termed idiopathic fevers; that the more violent the irritation is, the speedier will prostration occur, and the greater will it be, and the more rapid also will putrefaction take place, all which are additional causes of the numerous diversities in the external appearances of these diseases; finally, that the contagion of acute diseases reducing itself to a gastro-enteritis from miasmatic poisoning, the only question is to fully ascertain by observation, to what extent persons affected in this manner, may become dangerous to healthy persons who approach them. We have never doubted, since we had any knowledge of medicine, and we do not yet doubt, that the transpiration and *halitus* of a person suffering from very intense acute gastro-enteritis, may develope the same affection in a predisposed person; but we have not believed, and will never believe, that this propagation can extend to any distance. It requires, in our opinion, a concurrence of circumstances, which cannot be supposed to occur; that is, a repeated succession of predisposed per-

sons subjected to the influence of numerous cases of very violent gastro-enteritis. We do not deny, that true instances of contagion may have been seen, and well verified, for example, in yellow fever; we do not, on the contrary, conceive that it is possible to deny it; but we repeat, that since this contagion occurs so seldom, and is so limited in its range, the extension of a disease over the whole earth by that means is absolutely impossible.

PROP. CCLVI.

All the irritating and escharotic poisons, vegetable, animal and mineral, when applied to the skin in large quantities, develope in the digestive mucous membrane, in the brain, and sometimes in the lungs, an inflammation analogous to that which they have excited on the exterior, by the transmission of the irritation to the interior.

This proposition merely applies to cutaneous inflammations produced by rubefacient and escharotic poisons, what has been already said of inflammations of the periphery in general which extend always towards the centre. See also the propositions relative to the generalities of irritation. What is here said of phlegmasiæ from escharotic substances is equally applicable to those produced by boiling fluids and even by hot coals or flame. These burns produce inflammations which, when they are violent, never fail to be repeated in the principal viscera. If simple inflammation may be thus transmitted from the exterior to the interior, with how much greater reason ought we to expect this transmission to occur, when the exciting agent of the phlegmasia is of such a nature as to be susceptible of being absorbed and to join its direct action to the sympathetic influence of the phlogosis which it has excited on the external surface of the body. We have pointed this out in speaking of the treatment of chancrous ulcers by the arsenical paste: the same remarks may be applied to cantharides, and perhaps to many other escharotic articles.

PROP. CCLVII.

Poisons of every kind when injected into the sanguineous vessels, occasion gastro-enteritis, &c. if they be not sufficiently powerful to occasion sudden death.

PROP. CCLVIII.

Putrid flesh inserted into living flesh, or sanies injected into the blood-vessels, act upon the gastric passages as if they were swallowed, when sudden death does not prevent the gastro-enteritis.

These two propositions present us with the great truth which furnishes the key to all febrile infections and contagions. Not only stimulations of the surface, but all substances which are absorbed into the system or injected into the vessels, meet in the epigastric centre. This centre, the organ where assimilation commences, is the source of vital action: passions, for the period of activity—sleep, for those of the repose of the living body—all is effected by its means, its integrity assures the preservation of life, its energy the efficacy of the conservative actions; the sensation of pleasure or of pain when of any degree of intensity proceeds from it; in reality every thing proceeds from it, since all the phlegmasiæ of the other organs develope inflammation in it, and all the poisonous molecules introduced by the other passages, such as by respiration, cutaneous absorption, the absorption which goes on in the cellular tissues, in the serous membranes, and even by injection into the veins and which seems directed only to the circulatory centre, cannot develope reäction in the system without the epigastric centre appearing the primary agent. It is in fact there that the first feelings of uneasiness are experienced; it is from it that the sensation of pain which extends to the back, loins, limbs and head, arise; it is there that the

anguish which compresses the base of the chest, oppresses the heart and causes depression of the spirits, is perceived.

Is it desired now to know whether all these painful perceptions are illusions of sensation? examine what takes place in an animal in whose veins putrid sanies, a decoction of tobacco, a solution of opium, or some other acrid or poisonous substance has been injected, in an insufficient quantity to produce sudden death: after having testified its anguish by interrupted respiration, by convulsive movements of the face, the animal is affected with nausea and vomiting, if it be one of those which is capable of vomiting, it is afterwards affected with diarrhœa, with sweating if its skin be transpirable, and with salivation if it be not, the whole accompanied with a marked febrile action. Following this depuratory elimination, the first impulsion of which proceeds from the epigastric centre, a calm is reëstablished if the poison has not left in the viscera any trace of its passage; but if it has left some, these traces are phlegmasiæ occupying the internal membrane of the stomach and that of the small intestines, and an irritation with sanguineous engorgement of the brain more or less approaching to inflammation. Hence the soporose and convulsive state which follows the injection of narcotic poisons, and the state of acute typhoid gastro-enteritis which is observed after that of putrid sanies. It is useless to add that if the nervous power is exhausted in this depurative contest, that is, if the nervous matter which forms part of the gastro-intestinal mucous membrane, and that of the centre of relation, has lost its capacity for excitation, the patients succumb in the consecutive collapse, or if they do not perish, they fall into adynamic torpor, which is always necessarily proportionate to the degree of irritation which the poisons have excited.

Physicians, however, strangely deceive themselves, if they attribute the febrile state of torpor of several days continuance which succeeds to these violent actions, to the simple collapse of the nervous matter; simple debility is never febrile, and the typhoid state, in the cases under consideration, can be explained only by the really inflammatory irritation of the gastro-intestinal mucous membrane, participated in, as is fit, by the nervous matter which forms a part of it, and propagated to the brain in a

degree most frequently less than that of inflammation, sometimes even truly inflammatory.

We cannot avoid applying to yellow fever, to plague, and, in a word, to all typhoid miasmatic fevers, what has been just said respecting poisonings; and we believe that we may even go further, for we think that such is nearly the mode of action of the causes which produce small-pox and the vaccine disease. When the virus is absorbed, it developes symptoms of irritation in the epigastric centre, heat is felt there, thirst results from it, and the appetite is lost; the respiratory and locomotive muscles become painful and less capable of fulfilling their functions, which vary according to the intensity of the action of the virus, its quantity and the degree of gastric irritation which it has produced. Finally, when the irritation of the gastro-encephalic nervous matter has produced its full effect, fever comes on, the blood is repelled into the cutaneous vessels, and the eruptive inflammation manifests itself.

It is perfectly evident that the exciting cause is very different in small-pox, in plague, yellow fever, and in the different typhus fevers which may be produced by the emanations from putrid matters of different degrees of animalization, and more or less abundant. It is the same as respects *deleterious* gases, arising from foci where there is a free evaporation, or rather from those which have been long covered up, and are suddenly opened, &c. but this peculiar and variable activity of poisons serves even to demonstrate the uniformity of vital laws, since they always act upon the same tissues, and the irritation they produce in them always developes the same sympathies and constantly exhibits the same eliminatory and depuratory actions. It is already known that we do not mean by this that every febrile action requires an effort of a certain number of days to prepare a salutary depuration. We have explained our opinions on this point; however, it appears to us that this is the place to repeat that every perturbation caused in the animal body, either by physical or moral agents, tends to terminate either by convulsive motions or by evacuations, and that the nervous matter of the epigastric centre appears to be, as the principal exciter of the visceral apparatus,

the instrument of these synergic reactions, even in cases where the disorder has commenced in the encephalic apparatus.

It is doubtless on this account that all internal stimulations are directed by the nerves towards that important centre; but can it be determined whether these nerves themselves, with their ganglions, are the agents of these general commotions, or whether this office did not rather appertain to the nervous matter making part of the internal sense and of the assimilating surface of the stomach?

We do not believe that science possesses facts observed in such a manner as to render this question capable of being completely solved; but there are a certain number of well determined facts which are connected with it, and which show that if the internal gastric membrane is not always that from which the sensations that are referred to the epigastrium, and the organic actions resulting from them arise, at least it is often so; and that by modifying that part we more easily effect a modification of these sensations than by acting upon any other organ.

PROP. CCLIX.

The stings and bites of venomous animals, which leave a poison in the wound, determine a local inflammation which passes into gangrene, with a rapidity proportionate to the intensity of the irritation. The most dangerous of these poisons occasion anxiety and death by their influence on the nervous system. But if life continues long enough, the inflammation is repeated in the principal viscera, especially in the gastric passages, and always with a tendency to mortification. Gangrene is then here as in all other cases the result of a too rapid exaltation of the vital phenomena. Finally, the weaker of these poisons are restricted in their effects to the production of local inflammation.

The poisons which venomous animals may deposit in a wound differ much in intensity. Some of them penetrate so rapidly,

that it cannot be believed that they enter the system through the absorbents or veins; they are almost as active in their operation as deleterious gases or the hydrocyanic acid, and their action can only be explained by a propagation of irritation through the nerves to the brain which reflects it to the visceral nerves. Time is not afforded these last to produce a local phlegmasia; and the nervous substance is very speedily rendered incapable of maintaining the functions. It is useless to interrupt the communication between the poisoned wound and the circulatory centre; the propagation of impressions through the nerves is effected in an instant. No explanation of the mode of action of these kinds of poisons goes beyond this fact; but it is possible to establish a comparison between poisonous stimulants and those not poisonous which may be discovered or suspected to possess the property of rapidly transmitting their action through the nervous system without requiring to be first taken into the circulation. We think that this property may be demonstrated to be enjoyed by many of those stimulants termed diffusible, which possess, according to the notions of the ancients, the power of producing a sudden strengthening of the system, and of truly meriting the epithet of *nervines*, and of *cephalics*, which have been given to them. It is necessary to find a means of proving the presence in the brain of the poisonous or salutary modifier, which had been too short a time in contact with the nervous matter of the surfaces of relation, to allow of its being absorbed, in order to perfectly distinguish this modification from that which is merely a perturbation of the nervous matter, either physical, as from a shock—or moral, such as we experience in the highest degree of sensation, as in rage, joy, and terror, which, in excess, may become a cause of sudden death, equal in promptness to poisoning by hydrocyanic acid, or the emanation from a cloaca. We would find probably some depressing modifiers such as the gas furnished by putrefaction, and the effect of which upon persons unaccustomed to it is a feeling of sadness and of fear; perhaps it would be necessary to refer to it the exhalations of some poisonous plants; others would be exhilirating, as the aroma given out by several vegetables, and a much greater number of flowers. We should ascertain whether the same effects are produced by the direct introduction

of foreign molecules into the nervous system as by the perturbation of this system, a perturbation of which a certain degree is salutary, whilst a more violent one is injurious and often fatal. We should thus obtain much surer data upon which to found our therapeutic and hygienic measures, than those we now possess, and which upon many of these points are as yet only approximations.

Let us proceed to the consideration of the local action of poisons proceeding from the bite or puncture of venomous animals.

This action is irritative; for in all cases there is swelling with burning heat, discoloration, violent pain propagated through the nerves of the part, and gangrene, when it supervenes, is only the consequence of a super-excitation. All bites of serpents and stings of venomous insects produce this local effect, but in different degrees. None of these poisons have the direct and diffusible action on the nervous system of which we have spoken; but they all may, by the external inflammation which they excite, become the remote cause of a visceral phlegmasia, the stimulation being, as we have proved, transmitable from the exterior of the body to the interior independently of the modifier which has produced it.

Moreover, whether immediate penetration of the poison into the substance of the nerves, or absorption of this poison after remaining some time in the wound made by the animal, does or does not occur, it is certain that if the patient does not die in a few instants, phlegmasia will be developed in the visceral apparatus, and that the gastro-duodenal mucous membrane will be its principal seat. Many physiological physicians have been led by these facts to entertain the idea of treating the symptoms which follow the bite of the viper by antiphlogistic measures; and it has been attested in some medical journals, and among others in the *Journal Universel des Sciences Médicales*, that these symptoms have disappeared under such a treatment; but a similar attempt has not been made in the bites of rattlesnakes. We are far from affirming this treatment to be the only one which can succeed in these kinds of poisonings; it is possible that certain agents may be capable of producing a mode of nervous excitation which

destroys that produced by the poison. Many experiments are required for the elucidation of this question.

As to poisons of little activity, such as those from the stings of wasps and bees, the quantity is so small, that it can exercise a local irritation only. But if the stings are very numerous, the external irritation may, by reäcting upon the viscera, become a cause of death. It is to be presumed that then the absorption of a part of the poison has some influence in the production of the gastro-cephalitis which becomes the cause of death.

PROP. CCLX.

The bites of rabid animals determine always a gastro-enteritis, and the inflammation is often repeated in the pharynx, in the brain, in the lungs, and in the genital organs. The delirium and convulsions are always the sympathetic effects of these phlegmasiæ and vary according to the degree of susceptibility or the idiosyncrasy of the individual.

The subject of hydrophobia is one of the most embarassing in medicine, on account of the little affinity between the cause and effects; but is the difficulty really in the facts? Does it not rather arise from the manner in which we are accustomed to view them? If we lay down these facts in the simplest manner, the following is what we find according to the greater number of observers:—*The production of an exceedingly violent inflammatory and nervous disease, by innoculation with the foam of the mouth of an animal affected with the same disease;* for it appears from the testimony of a majority of observers, that the bite is not at all necessary for the contagion, and that the insertion of the foam in a wound or its application upon an opening of a mucous membrane is sufficient. The symptoms of this disease are at first sadness, præcordial distress, internal burning in the epigastrium and throat, with impossibility of swallowing fluids notwithstanding that there is excessive thirst, and even horror of water

and of all polished bodies, to such a degree, that the mere sight of these objects excites frightful convulsions; irritation of the throat, copious secretion of saliva and mucus, afterwards dryness, heat, constantly increasing constriction in this same region, so that deglutition is utterly impossible. Acceleration of the pulse also occurs and completes the phenomena of acute inflammation of the stomach and of the œsophago-trachean mucous membranes. Afterwards symptoms of irritation of the brain and of the spinal marrow are added to the first and become predominant. These last are delirium, presentiments of a fatal result, always more marked in adults who know all the horror of their situation, and finally convulsions not only of the voluntary, but also of the respiratory muscles; convulsions which seem to be a sequel to those of the muscles of the larynx and os hyoides. This excess of innervation is not long in exhausting the strength and producing death. Post mortem examinations show redness of the pharynx, œsophagus, trachea, bronchiæ, stomach and the upper portion of the small intestines; the liver gorged with blood and voluminous; the pulmonary parenchyma has been sometimes found in part hardened, but that has not been constant. There is also sanguineous engorgement of the cerebral substance and of the pia mater, and redness of the arachnoid in many points, especially towards the base of the cranium and the spinal marrow.

Such are the symptoms and appearances on dissection, in relation to which all observers are agreed. What may we infer from them? That there has been very intense irritation at the same time in the mucous membranes of the fauces, œsophagus, stomach, duodenum, jejunum, bronchiæ, and in the cerebro-spinal substance, (for we have proved that phlegmasiæ of the meninges are the sequel of irritation of the cerebral nervous matter;) 2d, that this irritation has at first attracted the blood into the tissues which it occupies, and that it destroys in a very short time the power of the nervous matter to maintain life.

We come next to the third induction from the opinions of the majority respecting the cause of the preceding phenomena; 3d, that this irritation has been produced by the application of the foam from the mouth of an enraged animal to the nervo-sanguineous tissue of the periphery of the body. Here then is a

second series of facts obtained by induction, and which serve, to a certain extent, to elucidate the former.

We may now go further to seek a third series of facts by asking:—1st, why the foam of an enraged animal has become so active a poison; 2d, whether it is the saliva or the mucus of the mouth or larynx, or all these united, which have this poisonous property; 3d, how it can happen that so terrible a poison should often remain several days and even several months before producing its effects; 4th, whether its action is developed and propagated by the nervous substance of the part in which it is deposited, or whether it does not act until after being absorbed and conveyed with the blood into the nervous matter of the brain and visceral mucous membranes?

All these questions suppose, as we see, that the symptoms of hydrophobia are the effect of a virulent excretion. But it is objected:—1st, that hydrophobia occurs in dogs who have not been bitten, and then it is attributed to inflammation of the gastric mucous membrane, commonly super-excited by the presence of worms; 2d, that dogs who become mad from the bite of the former, are equally affected with gastro-enteritis, (but it must be ascertained whether those who do not become mad after having been bitten, are not exempt from worms;) 3d, that madness may also occur spontaneously in man by excess of fury or of venereal orgasm; 4th, that we may arrest, in the incipient stage, the development of hydrophobia in a man bitten by a mad dog, by quieting his imagination, and by treating the wounds and visceral phlegmasia by antiphlogistic measures only; whilst the same result is less readily obtained by cauterization and supposed specific stimulants, whatever security they may inspire persons with who have been bitten; 5th, that the innoculation of hydrophobia has been tried without success, by the insertion of the foam into wounds, and to the mucous membranes of men and animals.

The inductions which, it is supposed, may be drawn from this series of facts are that hydrophobia does not depend on a specific virus, but that it is a gastro-cephalitis with the most formidable nervous symptoms, and that it may be treated with success by antiphlogistics.

When the facts appear contradictory it is difficult to decide,

since it supposes that they have been badly observed, and requires delay in order to repeat the observation. For our part, we restrict ourselves to drawing deductions from generally admitted facts, and to point out those which require to be verified. 1st. That there exists gastro-enteritis with pharyngo-bronchitis and cephalitis in hydrophobia, appears to us to be beyond doubt. The other phlegmasiæ are not constant. 2d. Hydrophobia may occur spontaneously as well in man as in the dog and wolf, but it most frequently depends upon the bite of one of the *canine* family. 3d. Hydrophobia may be communicated by the same means to warm-blooded animals of another genus, but how far this extends is not known. 4th. The development of hydrophobia in children, in idiots, and in animals, by the bite of a rabid animal, proves that the disease is not the effect of anticipation and terror; but these feelings cannot fail greatly to aggravate the symptoms in sensible adults.

These appear to us to be proved—the following we regard as uncertain: 1st. Whether communicated hydrophobia is the effect of a virus contained in the foam? and if in the affirmative, does this virus exist in the saliva or in the mucus? 2d. Can it be believed that the want of cutaneous transpiration may be the indirect cause of it in the dog, whilst the salivary glands, or the mucous membrane of the mouth or throat acquires at certain periods, as during hunting, in heat, or in rage, an increase of action which renders the saliva or the mucus virulent? Can this virulence be produced by gastro-enteritis alone? If it depends upon a moral excitement, is it limited to the moment of passion or does it continue after death? 3d. Does hydrophobia arise rather from a vital influence, entirely nervous, exercised by a furious animal upon one in cold blood or chilled by terror? 4th. Have rage and the venereal orgasm, which have really produced spontaneous hydrophobia in man, also rendered the saliva poisonous or virulent, so that it can communicate hydrophobia? 5th. The predominant point or the primitive irritation in man is in the brain; in this case is it greatest in the base of the cranium, in the medulla oblongata, or in the spinal marrow; or indeed is this predominance limited to cases in which horror of water exists to a high degree? 6th. What consideration does the opinion of those merit who

still think that communicated hydrophobia depends on a kind of disorganization produced in the extremities of the nerves by the bite, and who explain by a more or less slow local action, the extremely variable period that elapses between the bite and the development of hydrophobia? 7th. Hydrophobia is sometimes developed several years after the bite, and upon the person being told that others bitten by the same animal have been affected with the disease; are such cases really the same as that developed in a few days, (ten to forty,) after the bite of a mad dog, especially in children and those who are ignorant? Are not those cases rather cephalo-gastric, or cephalo-splanchnic irritations, the effect of terror?

Whatever solution the preceding questions are susceptible of, it appears certain, that hydrophobia is so intense an irritation, that no revulsive medication is applicable to it. The antiphlogistic treatment is then the only one which can succeed; but it is necessary to employ it energetically, and from the very commencement of the disease, because here, as in all the highest grades of super-irritation, as tetanus, cholera morbus, yellow fever, and all gastro-encephalic irritations with a very quick, or violently convulsive pulse, the excess of innervation soon destroys the condition of the cerebral substance, and that of the nerves, upon which the continuance of life depends.

We have advised in other works, and we have recommended in our lectures, since 1814, not to adhere to general blood-letting, but to detract blood from the most irritated parts, in proportion to the strength of the patient; to administer water in every possible way, and to substitute powerful revulsion for the antiphlogistic treatment, as soon as collapse replaces the excess of irritation: opium in large doses, and medicinal baths of different temperatures, according to the subject and the season, appear here to merit the preference.

As to the prophylactic treatment to be resorted to, after the bite, there is nothing that appears to us comparable to cups applied upon the bleeding wounds, and scarified, to effect the most complete evacuation.

PROP. CCLXI.

Worms in the bowels are most frequently, but not always, the product of the alteration of the mucus and heat which results from a gastro-enteritis of greater or less intensity, hence the very various effects of irritating anthelmintics.

Assuredly all the conditions favourable to the production of worms in the human body are not known; but we entirely appreciate the coïncidence of an irritation which depraves the mucus of an internal membrane of relation, with the reproduction of these animals. This fact being proved, we ought next to inquire to what extent the medicinal substances which we know to be suitable for destroying worms, may be supported without danger by this membrane. Presented in this point of view, the question assumes great importance, the more so as the internal membrane of the digestive tube is the most common seat of different species of worms, and it is not at all uncommon to meet in practice with persons whose health has been entirely destroyed by active medicines given them for the cure of tænia.

The ideas of debility and of mucosity, were so associated in ancient medicine, from the authority of Galen and his school, that no other indication could be found for any super-secretions of mucus, than that of tonics. Hence arose the predominance of a stimulating and evacuating treatment over all others, in the diseases of children. The chemists who followed them, endeavoured to inculcate the notion, that the mucus was always a sign of a deficiency of animalization, which only confirmed the inductions of the humoralists, since the animalizing means belong to the class of irritants. The irritability of the membrane which receives the action of the modifiers went for nothing in their speculations; but two things were thought of, to expel the worms and to strengthen the system, in order to prevent their regeneration. They laid great stress upon the success obtained by vermifuges, after the expulsion of a greater or less number of worms; but they shut their eyes to the irritation which these

remedies left in the digestive apparatus, because they had plenty of morbid entities to explain it; sometimes it was fever, at others bile or putridity, in other cases debility or the nerves; and ultimately, in consequence of the progress of pathological anatomy, organic derangements, which became responsible for the faults of the physician.

The object of the proposition is not to deny the specific action of certain medicines, as mercury, the artemesia, Corsican moss, &c. but to call the attention of practitioners to a state of phlegmasia, often latent, sometimes less equivocal, which commonly accompanies worms, and especially in the digestive tube. We have so often seen worms, whose existence in the intestines has been fully indicated by the proper symptoms, and even by their being evacuated, disappear with the inflammation which accompanied them—that we have been led to think that it is rarely necessary to endeavour to destroy them by specifics, and that in cases where their great numbers offers this indication, it may be accomplished with more success by oil, mucilages, and acids, than by bitter substances, render stimulating by acrid oils or purgative, or drastic substances. We know, that in some cases of slight enteritis, acrid anthelmintics may produce an useful revulsion at the same time that they expel the worms; but ought these cases to serve for a rule? Do we not know that wine, cinchona, and even phosphorus, do not kill all those affected with acute gastro-enteritis, to whom they are imprudently administered; that all peripneumonies treated with hot wine and sudorifics, are not necessarily fatal, &c. &c.? Nature, harassed by violent poisons, sometimes preserves itself, we know, by violent crises; but if it be true, that it often succumbs in these struggles, and if, when it triumphs, there almost always remains in the visceral apparatus a nervous susceptibility, which renders persons valetudinary, is it not sufficient to renounce making a system of this perturbating practice? Now, we think that such are the chances of the stimulating medication in cases of the disposition to worms, whether acute or chronic, and to impair them as much as we can, and it is to subject the cases of worms to the same physiological views which should preside over all other diseases that we have thought it our duty to give this development to the proposition.

SECTION III.

THERAPEUTICS.

PROP. CCLXII.

It is always dangerous to neglect to arrest inflammation at its commencement, for crises are violent and often dangerous efforts which nature makes to rescue the system from great danger; it is therefore useful to anticipate these crises, and imprudent to wait for them.

PROP. CCLXIII.

There are four kinds of means for arresting the progress of inflammations; viz. debilitants, revulsives, permanent tonics, and the more or less diffusible stimulants.

PROP. CCLXIV.

The debilitants proper for arresting inflammations, are bleeding, abstinence, and emollient and acidulated drinks; but the most efficacious of all is blood-letting.

PROP. CCLXV.

Bleeding from large vessels is proper in those sanguine engorgements which form with rapidity under the influence of irritation, in the parenchymatous structure of the organs; bleeding from the capillary vessels, performed as near as possible to the point of irritation, that is, upon

that portion of the skin corresponding to the inflamed organ, ought to be preferred in all other cases, especially when the disease is still recent.

PROP. CCLXVI.

No inconvenience results from pushing blood-letting to syncope in the recent inflammations of persons previously healthy; but under opposite circumstances this practice would cause a sacrifice to the patient, for which it is not certain that he would receive a benefit proportional to the risk. The same remarks may be made respecting complete and prolonged abstinence from aliment. The hæmorrhage from leech-bites is often excessive in infants and young subjects whose skin is full of blood and the action of their heart very energetic. The bleeding from the bites should therefore be arrested as soon as faintness is perceived.

PROP. CCLXVII.

Local bleedings are often injurious in old-standing inflammations of the principal viscera, when there is no superabundance of blood in the system generally. In such cases local bleeding rarely fails to increase the congestion; it is better therefore to abstain from it, or to perform it at a point remote from the principal seat of the irritation.

PROP. CCLXVIII.

General or local bleedings in a person who is deficient in blood generally, always produce much uneasiness, augment the visceral congestions, and often in that way give rise to convulsions and fever.

ATTENDANCE CERTIFIED ATTENDANCE CER

PROP. CCLXIX.

When a very recent inflammation, occurring in a previously healthy person, after having yielded to local bleedings, suddenly revives, the same means may be recurred to frequently; the convalescence will be only the more prompt and easy: but if there existed a chronic phlegmasia previous to the occurrence of the acute, this practice will be often dangerous. It would be equally perilous if the inflammation were general in one or more viscera; in this case, we must stop depleting, if the pulse loses its force without decreasing at all in frequency.

PROP. CCLXX.

Moderate inflammations of the encephalon readily yield to leeching of the epigastrium, especially when the encephalitis has been preceded by gastritis; but violent sanguineous congestions of the brain require bleeding from the jugular veins, arteriotomy, and leeches to the upper part of the neck; cold should afterwards be applied to the head, and, at the same time, warmth to the lower extremities.

PROP. CCLXXI.

Cerebral congestions, with feeble pulse, require cold to the head, and warm water to the lower extremities, so as to produce a rubefacient effect, before recourse is had to blood-letting.

PROP. CCLXXII.

Leeches applied to the lower part of the neck, between the insertions of the sterno-mastoid muscles, remove bronchial catarrh, and prevent phthisis pulmonalis. This means is efficacious in the catarrh which accompanies measles, and which sometimes, if not thus checked, produces fatal strangulation. The purulent appearance of the expectoration does not counter-indicate the use of this remedy.

PROP. CCLXXIII.

Leeches placed near the clavicles, and under the armpits, arrest the progress of a catarrh which has spread to the superior lobes of the lungs, and which would, unless arrested, inevitably have produced phthisis pulmonalis. A very recent, dull sound or one less clear than natural, indicates that the catarrh has extended to the parenchyma, and points out the necessity of resorting to local bleedings.

PROP. CCLXXIV.

Leeches applied to the epigastrium, more effectually arrest gastritis than when applied to the anus; but in colitis they are more efficacious when applied to the latter situation.

PROP. CCLXXV.

When colitis does not yield to the application of leeches to the anus, and a painful point and tumefaction can be distinguished in the track of the colon, the disease will

be cured by the detraction of blood from this part, by the reäpplication of leeches, or cups.

PROP. CCLXXVI.

To remove incipient colitis by the application of leeches to the proper situation, is to annihilate epidemic dysenteries.

PROP. CCLXXVII.

Angina tonsillaris, pharyngitis, or laryngo-trachealis, as croup, hooping-cough, &c. yield more readily to local bleedings, than to an emetic, which frequently exasperates them, especially when there is plethora or gastritis, &c. But certain stimulants, as the sulphate of alumine or the muriatic acid with honey, are useful local applications in membranous angina, as contra-irritants, or to change the nature of the inflammation.

PROP. CCLXXVIII.

Bilious, mucous, and other symptoms of gastric derangement are more promptly and certainly cured by the application of leeches to the epigastrium, or simply by abstinence, with water for drink, than by emetics.

PROP. CCLXXIX.

Jaundice almost always depends upon gastro-duodenitis or hepatitis, and is removed by the application of leeches between the epigastrium and hypochondrium, provided it be followed by demulcents and an appropriate regimen.

PROP. CCLXXX.

Articular inflammations, when simple, readily yield to the application of leeches; but when they are complicated with gastritis, it is often necessary for their cure, to draw blood from the epigastrium.

PROP. CCLXXXI.

The eruptive fever of acute cutaneous phlegmasiæ being the signal of an inflammation of the viscera, precursory to that of the skin, local bleeding performed as near as possible to the principal seat of the internal irritation, facilitates the appearance of the eruption, and diminishes the danger.

PROP. CCLXXXII.

The *secondary* fever of confluent small-pox being the effect of the erysipelas, produced by the pustules, may be moderated, and sometimes prevented; 1st, by bleeding during the eruptive fever; 2d, by the application of leeches to the neck immediately previous to the appearance of the erysipelas of the face.

PROP. CCLXXXIII.

The fever called *adynamic*, which supervenes upon confluent small-pox, being only a gastro-enteritis, produced by the cutaneons erysipelas, may be prevented by the means which arrest the progress of this erysipelas. (See the preceding Proposition.)

PROP. CCLXXXIV.

The worms which accompany acute gastro-enteritis being the effect of this phlegmasia, do not require any particular remedies; they are expelled by nature, after the subsidence of the inflammation.

PROP. CCLXXXV.

Worms do not demand a particular treatment for their expulsion, except when unattended by acute or chronic gastro-enteritis, or after this inflammation has been sufficiently checked.

PROP. CCLXXXVI.

The *sequelæ* of measles are inflammations of the bronchiæ, of the lungs, or the gastric passages; they do not therefore require any other treatment than such as is proper for these inflammations.

PROP. CCLXXXVII.

Emetics cure gastro-enteritis solely by the revulsion and the critical evacuations which they provoke: their effect is then uncertain in mild cases; and in severe ones they are always dangerous, because they never fail to augment the inflammation, when they do not succeed in removing it. It is the same with purgatives; but those which are bitter, augment most the heat, whilst the saline mask the inflammation by rendering it chronic. Such is often the effect of calomel, and of the neutral salts, which only calm the sufferings of gastro-enteritis, by

keeping up a diarrhœa, which terminates in marasmus or dropsy.

PROP. CCLXXXVIII.

Vesicatories often augment gastro-enteritis, because the inflammation which they produce, adds to that of the digestive mucous membrane, instead of producing revulsion; they do not then render the services expected from them, in that grade of these diseases which is called *adynamic fever*.

PROP. CCLXXXIX.

Vesicatories most frequently exasperate inflammations, whether acute or chronic, of the different tissues of the lungs, when they are applied before the employment of antiphlogistics; but after repeated bleedings they are very successful in producing revulsion.

PROP. CCXC.

The stomach is an organ which requires to be stimulated, in order to maintain by the sympathies it awakens, the degree of irritation necessary for the performance of the functions; but this stimulation should be in a degree and in a manner corresponding to its vitality, for it is the seat of the internal sense which regulates the system.

PROP. CCXCI.

When the sensibility and irritability of the stomach are much augmented, all stimulants injure it, and precipitate the performance of its functions to such a degree

as to put a stop to them. Such is the case in intense gastritis, cholera, yellow fever, &c.

PROP. CCXCII.

Excessive irritability of the stomach not always manifesting itself by pain, nor vomiting, but rather by the violence of the fever, by delirium, by stupor, and by convulsive movements, these sympathetic symptoms should suffice to determine the practitioner to renounce the employment of stimulants.

PROP. CCXCIII.

The stomach when tormented by stimulants, sometimes relieves itself of the irritation by transferring it to the exhalant and secretory vessels by means of the sympathies, which it is naturally destined to bring into play; this explains why gastro-enteritis when superirritated is not always fatal.

PROP. CCXCIV.

When the stomach is affected with chronic inflammation of a certain degree of intensity and occupying the whole extent of its mucous membrane, all stimulants are injurious to it, and it cannot relieve itself from the irritation which they produce except by the inflammation becoming acute, and awakening the organic sympathies by means of which it may excite a crisis with evacuation; for the sympathies of relation cannot afford relief.

PROP. CCXCV.

The stomach affected with chronic gastritis, which is besides aggravated by stimulants, is exposed to great

danger, if its inflammation be too intense to be relieved by revulsion; because it is likely to become disorganized. Hence results the cure or the exasperation of chronic gastritis by the use of mineral waters, &c. The irritation which it transfers to the lungs, the brain, and extremities is then often converted into phthisis, mania, apoplexy, or gout.

PROP. CCXCVI.

If chronic gastritis be circumscribed to a more or less limited point of the stomach, which is always indicated by the seat of the pain in this organ, that of the muscles which correspond to it, and the period of digestion at which all this is most marked, stimulants disagree with it, augment the pains in it, and produce uneasiness and fever; but when by the use of tranquillizing remedies, the irritation of the diseased part is calmed, the remaining portion of the organ which is too relaxed desires stimulants; these procure ease, increase the strength and augment nutrition, till they have revived the partial inflammation, which was only blunted for the time. As soon as this irritation is revived, the original train of symptoms recur and stimulants are again rejected.

PROP. CCXCVII.

In partial phlogosis of the stomach, several years often elapse in alternations of excitation and sedation, produced by the versatility of the treatment, until the inflammation has disorganized the viscus, either producing scirrhus, or softening and perforating the organ; finally, the disease proceeds to such an extent, that the stomach will no longer support any thing, and death is then inevitable.

PROP. CCXCVIII.

Partial irritations of the stomach, characterized by the progress indicated in Prop. CCXCVI and CCXCVII, are to be cured by persisting in the rejection of stomachic medicines and by allowing sufficient aliment to support nutrition, but selecting it from among those which furnish nutritive materials, without being too stimulating; finally, by allaying with demulcent drinks the irritation which is always awakened at the termination of digestion in the stomach. This cure sometimes requires years for its completion, but it is the only one that is durable; it may succeed even when some degree of disorganization has taken place; but above all, it is important not to debilitate by sanguineous evacuations, nor by abstinence, which may deprive the stomach of its power of assimilation.

PROP. CCXCIX.

In chronic gastritis and gastro-enteritis, uncomplicated with colitis, a cure is sometimes effected by combating the constipation by calomel and the neutral salts; but only in cases where the phlegmasia is slight, for if it be inveterate and violent, especially if there be an organic derangement of the organ, this cure, like those procured with other stimulants, is only palliative.

PROP. CCC.

Hæmorrhoidal irritation is frequently the effect of chronic gastritis or gastro-enteritis, and ought to be treated in the same manner. The exasperation of the gastritis may suppress this flux, as it suppresses the

menses: it is then a great error to stimulate the stomach, in order to make the hæmorrhoidal discharge reäppear. The safest way is to direct the treatment to the gastric affection, for on its being dissipated, the hæmorrhoids are either cured without danger, or they return if the discharge be useful to the system.

PROP. CCCI.

When the stomach is not sufficiently stimulated by food, all the functions languish; but hunger soon developes in this organ an irritation, in which the brain partakes, which revives many of the functions in a manner unfavourable to the preservation of the individual. Such are the fury and mental exaltation of starving persons, which are quickly followed by convulsions, fever, &c.

PROP. CCCII.

Unsatisfied hunger produces gastritis, and the latter developes its usual sympathies.

PROP. CCCIII.

The heat of the epigastrium, the pains of the head and limbs, and the redness of the tongue, produced by hunger, disappear on the ingestion of stimulating aliment, when the gastritis is still in its first stage. At a later period, these phenomena are exasperated by it, and will not yield except to demulcents, followed by a graduated nourishment; but bleeding rarely conduces to the cure.

PROP. CCCIV.

When the stomach has transmitted into the intestines articles of food which have not sufficiently excited

it to enable it to assimilate them, colic and diarrhœa supervene, which yield to wine and alcoholic drinks. If these are administered on the first appearance of the colic, digestion is reëstablished and the diarrhœa prevented. This fact proves that assimilation is continued in the intestinal canal.

PROP. CCCV.

The assimilation of aliments is often imperfect during the treatment of partial chronic gastritis by the demulcent method, but the sympathies which result from this imperfect assimilation ought not to be attributed to inflammation. In this case the treatment indicated for these gastrites in Prop. CCXCVIII, must be pursued.

PROP. CCCVI.

The period when the assimilation of slightly stimulating aliments becomes imperfect during the treatment of general chronic gastrites which experience an amelioration, is the moment of cure of these phlegmasiæ.

PROP. CCCVII.

He who does not know how to manage irritability of the stomach, will not know how to treat any disease. A knowledge of gastritis and of gastro-enteritis is then the key to pathology.

PROP. CCCVIII.

When pulmonary inflammations have resisted antiphlogistics and vesicatories, they may still be efficaciously treated by cauteries, by setons and by moxas placed

as near as possible to the seat of the disease. But this is not always the case with inflammation of the mucous membrane of the digestive canal.

PROP. CCCIX.

Incipient acute hepatitis should be treated by general and afterwards local bleedings, which also act efficaciously on the gastro-enteritis which almost always accompanies it. This complication renders the effect of emetics more dangerous than useful.

PROP. CCCX.

Chronic hepatitis is sometimes palliated by emetics, purgatives, calomel, soap, and mineral waters; but it is rarely cured except by a perseverance in a demulcent regimen, and by revulsives and exutories, placed near the affected organ.

PROP. CCCXI.

Jaundice unattended with fever, even that of new-born children being most frequently the effect of a gastro-duodenitis, is more effectually combated by the remedies appropriate to this latter inflammation than by purgatives and pretended solvents; much more is this the case when the jaundice is accompanied with a febrile state, and when it depends upon hepatitis.

PROP. CCCXII.

Incipient peritonitis is readily cured by the application of leeches to the abdominal parietes; but when the inflammation has continued several days, it is often beyond the

reach of remedies. General bleeding alone rarely effects a cure; but it may assist when leeches do not detract a sufficient quantity of blood.

PROP. CCCXIII.

Puerperal peritonitis, being ordinarily the effect of inflammation of the uterus, ought to be arrested at its onset by the application of numerous leeches to the hypogastrium. It does not yield to emetics except when they effect revulsion; that is, it is often exasperated by them.

PROP. CCCXIV.

The warm bath does not cure peritonitis unless it cause a revulsion to the surface, and if it fail to produce this, it aggravates the disease. Thus the warm bath often renews peritonitis which had been arrested by leeching. This is not the case as regards emollient fomentations, and the vapour bath administered to the patient in bed, without disturbing him.

PROP. CCCXV.

The warm bath often aggravates acute gastro-enteritis, because the stimulation of the skin is commonly repeated in the interior of the gastric passages. Cold applications to the abdomen and even cold baths are more useful in summer, and when the lungs are not inflamed. These means sometimes enable us to dispense with a repetition of the bleedings.

PROP. CCCXVI.

When inflammation attacks simultaneously the mucous membrane of the lungs and that of the gastric passages,

we may after bleeding, apply cold upon the abdomen whilst at the same time warm applications are kept to the chest; but if the cough is aggravated, it is necessary to discontinue the cold applications.

PROP. CCCXVII.

Typhus fever being a gastro-enteritis produced by miasmatic poison, that is, by putrid emanations, and often complicated with some other inflammation, and especially that of the cerebro-spinal apparatus, may be arrested by the treatment proper for these diseases, when they are attacked in their incipient stage.

PROP. CCCXVIII.

When the inflammation of typhus is not attacked at its commencement, sanguineous evacuations are often dangerous; for the poisonous putrid exhalations weakens the vital powers and the vital chemistry, to such a degree, that the loss of blood can no longer be repaired.

PROP. CCCXIX.

The excessive exaltation of vital phenomena is the most powerful cause of their diminution, and heat is the agent best adapted to produce this exaltation: hence it is that the typhus fevers of warm climates, (where besides the putrid exhalations are most active,) are more dangerous than any others, and destroy robust more readily than weak persons. It may be hence justly concluded, that cold applications are more efficacious than repeated bleedings, which last are however very useful in these diseases; but cold should be employed at the com-

mencement of these fevers immediately after bleeding, and applied to the interior as well as to the exterior.

PROP. CCCXX.

The slightest stimulant greatly increases the intensity of the typhus fever of warm countries, when administered at an early period of the disease. Emetics are therefore very dangerous; for example, in yellow fever.

PROP. CCCXXI.

As the acute phlegmasiæ are always more rapid in their progress when they occur in tissues previously affected with chronic inflammation, the most efficacious means of diminishing the ravages of yellow fever, is to prevent the development of apyretic gastro-enteritis which frequently serves as a prelude to the acute; and to acclimate the individual.

PROP. CCCXXII.

Acclimation to a hot climate is obtained by general bleeding, by a considerable diminution in the aliment, and by quietude; but excess in vegetable food and refrigerating drinks, must be avoided, as they produce indigestion, for they develope an irritation, which becomes the germ of the dreaded gastro-enteritis, or of a dangerous colitis.

PROP. CCCXXIII.

Copious repasts are dangerous in warm countries, for those newly-arrived, because they exact a too prolonged

action of the stomach and keep up a considerable hematosis. The abuse of alcoholic drinks are also very dangerous; these two excesses retard acclimation and facilitate the action of miasmatic poisons.

PROP. CCCXXIV.

Aromatic waters, rendered stimulating by the addition of some spirituous liquor and acidulated, should be employed to repair the loss of fluids resulting from the excessive sweats produced by hot climates, in persons from northern latitudes; but if the quantity of solid aliment be sufficiently reduced, the thirst and sweat will be much less considerable.

PROP. CCCXXV.

Concentrated stimulants are always injurious to the inhabitants of the north transported to southern climates, at least until they are acclimated.

PROP. CCCXXVI.

When prostration of strength has succeeded to excessive irritation in yellow fever, the principal resource is to be found in acidulated drinks and glysters, and in cold applied to the exterior of the body, if the heat of the skin be considerable.

PROP. CCCXXVII.

When acute gastro-enteritis, either typhoid or not, has resisted bleeding from the capillaries of the epigastrium, and afterwards from the chest and head, in case of repetition of the inflammation in these cavities, and when the

blackness of the tongue, stupor, and feebleness of the pulse occur, the patient should be nourished with gum water, sweetened and acidulated; but if the mouth becomes clean, and the appetite returns, the patient should be nourished with milk and water, and afterwards with very light broths; otherwise he may perish from inanition before the termination of the phlegmasia.

PROP. CCCXXVIII.

The nausea and vomiting, which occur at the commencement of acute gastro-enteritis, do not demand an emetic, but leeches to the epigastrium, enemata, and emollient and hot cataplasms to the inferior extremities.

PROP. CCCXXIX.

Constipation is favourable in acute gastro-enteritis, because it indicates that the colon does not participate in the inflammation. It requires nothing more than an emollient enema daily, even when it continues; and if the temperature of the body be considerable, the enema should be cold.

PROP. CCCXXX.

The diarrhœa of acute gastro-entero-colitis, is cured at its commencement by leeches to the anus, in numbers proportioned to the strength of the patient. But if there be considerable prostration, with anemia of the sanguineous apparatus, we should content ourselves with gummed rice water, opium in small doses, and enemata of a solution of starch with some drops of the aqueous solution of opium.

PROP. CCCXXXI.

When the copious flow from leech bites has produced great debility in the commencement of acute gastro-enteritis, we must be careful how we revive the patient by stimulants; he should be allowed to remain in that state, if the circulation be not interrupted, because it is generally followed by a prompt cure and an extremely rapid convalescence. If, however, there be a *continued* state of syncope or asphyxia, we should administer some spoonfuls of wine and water, or of weak broth, and return to the use of demulcents as soon as the pulse is reëstablished.

PROP. CCCXXXII.

When the hæmorrhage from leech bites continues, notwithstanding the syncope and asphyxia, the flow of blood should be arrested, especially in young children, who are more subject to die from hæmorrhage, and who therefore require to be particularly attended to.

PROP. CCCXXXIII.

Local bleeding, abstinence, and aqueous drinks always arrest incipient phlegmasiæ, when the inflammation in the viscera is not very extensive; but if many organs are inflamed at the same time, and to a considerable extent, which is indicated by excessive anxiety, prostration, and extreme frequency of the pulse, all the blood of the system might be detracted before the disease would be arrested. In such cases the frequency of the pulse continues, notwithstanding the abundant evacuations of blood; we ought

then to economise this fluid, and restrict our treatment to nourishing the patient with aqueous drinks, adding gum and milk when there are no black encrustations on the teeth and tongue.

PROP. CCCXXXIV.

A meteorism commencing in acute gastro-enteritis is cured by the application of leeches to the abdomen; it is also cured by the application of ice to the same part: if allowed to continue, or if stimulants are administered, it may change into peritonitis.

PROP. CCCXXXV.

The subsultus tendinum and delirium, which occur during the continuance of acute gastro-enteritis, indicate that the irritation is propagated to the brain, and they yield at the moment of their commencement, to bleeding, or better to the application of leeches to the abdomen; but if these symptoms have continued for some time, they should be treated by the application of leeches to the temples, or better over the track of the jugular veins, because the sympathetic irritation of the brain is already transformed into true inflammation.

PROP. CCCXXXVI.

When there is a great appetite in acute gastro-enteritis, the patient having recovered from his stupor, weak broths, or milk and water, should be allowed, notwithstanding the frequency of the pulse, great heat, and the redness of the tongue continues: otherwise the hunger will increase the gastritis, and renew the stupor, the

blackness of the tongue, and the prostration; but more substantial aliment would be injurious.

PROP. CCCXXXVII.

When, during convalescence from acute gastro-enteritis, pain in the head, bad taste in the mouth, nausea, uneasiness, and frequency of the pulse occur, it is because the convalescent has eaten too much. In such a case we should retrench the food for one day, instead of giving emetics and purgatives. The next day convalescence will be reëstablished if no complication has taken place.

PROP. CCCXXXVIII.

When, during the course of a gastro-enteritis, there supervenes a difficulty in passing the urine, it is owing to the irritation being communicated to the bladder. A prompt application of leeches to the hypogastrium will remove this complication, and prevent a host of symptoms.

PROP. CCCXXXIX.

When inflammation of the parotid occurs during the course of a gastro-enteritis, we should cure it, or at least moderate its progress by the application of leeches, if the patient be not anemic, otherwise this external phlegmasia will renew the internal, or produce a fatal congestion of the brain.

PROP. CCCXL.

When epistaxis supervenes during an acute gastro-enteritis, it is favourable if the frequency of the pulse di-

minishes. If the hæmorrhage becomes excessive, it should be restrained by a vesicatory to the nucha, or between the shoulders.

PROP. CCCXLI.

If hæmoptysis occurs during an acute gastro-enteritis, notwithstanding the bleedings, it requires a blister to the upper part of the sternum. Intestinal hæmorrhages require a vesicatory upon the abdomen, and gum drinks, or rice water with sulphuric acid, because these hæmorrhages produce anemia of the viscera, which prevents the blister's being injurious.

CCCXLII.

Phthisis pulmonalis may be prevented by early removing the irritations of the respiratory organs by antiphlogistics and revulsives.

PROP. CCCXLIII.

Hypochondriasis is cured, and scirrhus of the digestive canal and even phthisis pulmonalis prevented, by those means which remove chronic gastritis. Bodily exercise and amusement of the mind are here of the first importance.

PROP. CCCXLIV.

Engorgements of the liver may be prevented or cured by the same means by which chronic gastro-enteritis is cured.

PROP. CCCXLV.

Chronic gastro-enteritis is cured by light food, and above all by attention to refreshing the stomach with aqueous drinks, given in small quantities, from the first hour after taking food until the next repast, or until bed-time.

PROP. CCCXLVI.

Chronic gastro-enteritis ought not to be treated by repeated local bleedings and complete abstinence, except in robust patients; for this treatment in feeble subjects would cause a degree of debility from which it would require years to recover, and during all this time the mobility of the system is extreme, and relapses very readily occur. Perseverance in a demulcent regimen and in the use of aqueous drinks during digestion, always suffice in cases of this sort, and will effect a cure, if the viscera are not disorganized. But the patient should be informed of the long time required for the cure, and assured that it is the only one that is durable.

PROP. CCCXLVII.

Riding on horseback is dangerous in chronic gastritis with considerable exaltation of the sensibility of the stomach.

PROP. CCCXLVIII.

The atmosphere of large cities is injurious to persons affected with chronic gastritis; that of the country is advantageous

to them, especially when united with exercise; for these modifiers, as well as aqueous drinks accelerate digestion, the prolongation of which process keeps up the irritability of the stomach, or diminishes the irritability of that viscus which renders digestion slower.

PROP. CCCXLIX.

Emetics, purgatives, and tonics, which act by revulsion, effect only temporary cures in chronic gastritis and gastro-enteritis, and render the radical cure more difficult.

PROP. CCCL.

Mineral waters, whatever may be their composition and their temperature, cure chronic gastritis only by the revulsive evacuations which they produce; and this is always after the disease has been exasperated by them; moreover these cures are rarely permanent, and after trying them for many consecutive years, the patients ultimately become most frequently entirely incurable.

PROP. CCCLI.

Chronic engorgements of the liver, spleen and mesentery being almost always the effects of chronic gastro-enteritis, cannot be completely cured except by a treatment appropriate to this last disease.

PROP. CCCLII.

The pharmaceutic preparations and mineral waters which cause an evacuation of the bile, mucus, urine, or which excite perspiration, hæmorrhage or cutaneous in-

flammation, diminish temporarily by this revulsion the engorgements of the liver and spleen, when the irritation of the primæ viæ is not violent; but it rarely happens that they effect a complete cure. This can only be obtained by a long perseverance in the regimen appropriate to the cure of chronic gastro-enteritis.

PROP. CCCLIII.

Mucous engorgements of the lungs, or chronic catarrhs with difficult expectoration of the bronchial mucus, are palliated by the expectorants and incissives of authors; but they are cured, only by antiphlogistics, by the influence of warmth and by revulsion to the external surface of the body.

PROP. CCCLIV.

If we desire to prevent scirrhus of the neck of the uterus which occurs at the critical period of life, as it is called, in women who have been affected with painful menstruation, we must allay the irritability of the uterus a long time before this critical period arrives.

PROP. CCCLV.

The abuse of venereal pleasures, and the violence suffered by the uterus in parturition, being frequent causes of cancer of the uterus, we should endeavour to allay the chronic inflammation of the neck which is the consequence of these violences, in order to prevent the formation of cancer.

PROP. CCCLVI.

Calculus in the kidneys and gravel do not require a long time for their formation, they are most frequently

prevented by the applications of leeches over the region of the kidneys, and by administering demulcent drinks as soon as the first symptoms of nephritis are perceived, and the disposition to this disease may thus entirely disappear.

PROP. CCCLVII.

Powerful diuretics, the saponaceous and alkaline remedies, uva ursi, turpentine, &c. procure the expulsion of calculi already formed, but they often keep up the latent phlegmasia which produced them.

PROP. CCCLVIII.

Recent catarrh of the urinary bladder yields readily to local bleedings, to refrigerant drinks, to abstinence and to the restoration of external irritations which had disappeared; but if it has become chronic, it is often incurable, and diuretics only palliate it. The means which procure the most relief in this last case are almost always of an antiphlogistic nature.*

* I did not construct any proposition respecting the treatment of acute encephalitis in 1821, the period at which the *Examination* was composed, because I supposed this disease to be too well known to render it necessary for me to dwell on that subject, in a work, which I was urged as I am at the present moment, to complete. For the same reason I have remained silent respecting pneumonia, pleurisy, erysipelas, phlegmon, and many other diseases, in relation to which, there was nothing new to be said, unless in relation to their complication with irritations of the primæ viæ; but as I have already fully developed these latter affections, I suppose that it will be easy for my readers to apply what I have said in relation to them, to the complications which take place, and to have a just idea of the inconveniences attached to super-irritation of the stomach by medicines,

PROP. CCCLIX.

Insanity cannot exist without some degree of irritation of the brain, accompanied with and often dependent on chronic gastritis, and these diseases should be treated by antiphlogistics and by revulsion. By abandoning them to the powers of nature, we expose the insane to epilepsy, as well as to general paralysis, idiocy and apoplexy, which are the results of the inflammatory disorganization of the

in the treatment of those phlegmasiæ of which I have omitted to make mention.

In fact, this application is extremely easy in most of the phlegmasiæ; but is it equally so in those of the encephalon? I doubt it much at present, because the conduct of many practitioners, even the most distinguished, have forced me to do so. It is on this account that I consign here, under the form of a proposition, my confession of faith respecting acute encephalitis and spinitis.

PROP. CCCLVIII, *bis.*

Acute encephalo-spinitis, produced by evident external causes, traumatic or others, presents only the indication for antiphlogistic modifiers applied to the system in general, and to the encephalon or spine in particular. Encephalo-spinitis produced by internal causes, commonly called spontaneous, not being developed in most instances, except as the result of phlegmasia of the great viscera, especially those of digestion, ought at first to be combated by means appropriate to these latter affections; if it does not yield, it ought to be treated as primitive encephalo-spinitis. Local bleedings, the application of cold over the affected part whilst the feet are kept warm, the administration of narcotics by the mouth, and even that of digitalis, and of the preparation of prussic acid, have produced effects which recommend these means to the attention of practitioners. Some recent facts, sufficiently numerous, inspire more confidence in these modifiers than in revulsion by emetics and cathartics.

brain. They are also exposed to organic alterations of the abdominal viscera, by which neglected gastritis always terminates.

PROP. CCCLX.

Phthisis pulmonalis, peritonitis, rheumatism and gout, are only accidental affections in mania:—not so with phlegmasiæ of the mucous membranes of the abdomen, and engorgements of the parenchyma of the viscera of this cavity. We thus see what is necessary to be done to prevent and to cure these accidental diseases.

PROP. CCCLXI.

The principal differences to be established between cases of mental alienation ought not to be deduced from the nature of the delirium, but entirely from the degree of the organic irritation of the brain and of the primæ viæ. The most inflammatory are the most violent, the others are grouped below them according to the intensity of the inflammation, afterwards according to the duration and probabilities of disorganization: from this the indications of physical treatment are drawn; but the nature of the delirium leads to the determination of the best moral means.

PROP. CCCLXII.

Laryngeal and tracheal phthisis are constantly the effect of a local phlegmasia which has not been arrested at its commencement, and they prove fatal only by the supervention of pneumonia or gastro-enteritis; this misfortune will be prevented by early subduing the tracheal inflam-

mation; or it will be retarded if already too far advanced to be cured, by preventing the development of inflammation in the lungs and organs of digestion.

PROP. CCCLXIII.

Hypertrophy of the heart, not congenital, being often the effect of a latent phlegmasia of this organ, may be prevented by general and local bleedings, by digitalis and by revulsion excited upon some part where external irritation was seated which has disappeared, if these means are employed as soon as the pulsations of the heart have acquired an extraordinary energy. Antispasmodics are then but inefficient palliatives.

PROP. CCCLXIV.

Digitalis taken into the stomach lessens the number of the contractions of the heart, only when the stomach is unaffected with phlogosis, and when the principal viscera are also exempt from inflammation; under opposite circumstances, digitalis accelerates the contractions of the heart, by increasing the progress of the inflammation.

PROP. CCCLXV.

Digitalis weakens the contractile power of the locomotive muscular apparatus. It may then be useful in convulsions, provided there does not exist any inflammation in the viscera; but in no case is it prudent to exhibit very large doses, or to continue its employment for a long time.

PROP. CCCLXVI.

Spontaneous hæmorrhages, should be treated, like inflammations by general and local bleedings, by refri-

gerants, and above all by revulsion, whatever may be the degree of strength of the patient. This last mean is the best resource when the debility has become considerable.

PROP. CCCLXVII.

Spontaneous hæmorrhages being often kept up by a focus of inflammation, either at, or at a distance from, the seat of the hæmorrhage, the attention of the physician ought always to be directed to this cause.

PROP. CCCLXVIII.

Spontaneous hæmorrhages often coëxist with hypertrophy of the heart. Digitalis then may be useful provided the state of the stomach will permit its employment.

PROP. CCCLXIX.

Spontaneous hæmorrhage very often succeeds to inflammation or assumes its characters in the same part. Hæmorrhages from the lungs should therefore be treated as inflammation by antiphlogistics and revulsives, without our being restrained by the supposition of the preëxistence of tubercles.

PROP. CCCLXX.

Mineral waters actively irritate the heart and the whole sanguineous apparatus, augment the hæmorrhagic disposition, and even produce it when it does not exist, and often induce aneurism of the heart, paralysis and apoplexy.

PROP. CCCLXXI.

Spasms and convulsions of every kind being always

the effect of local irritation either fixed or wandering, yield to the treatment proper for this irritation, that is to say, to antiphlogistics, and sometimes to revulsives, where the irritated tissue is not disorganized.

PROP. CCCLXXII.

Antispasmodics* cure convulsive affections, only when the stomach supports them without being too much excited, and when the point of irritation which causes these affections has not attained the degree of inflammation. On this account they are often injurious in hypochondriasis and hysteria.

PROP. CCCLXXIII.

Antispasmodics may suspend nervous phenomena, notwithstanding the inflammation of the tissue upon which these symptoms depend, but the disease is exasperated, and the cure is obtained solely by antiphlogistics and revulsion.

Exercise of the locomotive muscles is the best means of destroying the convulsive motility: it acts by displacing the visceral irritations, by exhausting a superfluous activity and by attracting the powers of the system towards its nutrition and to the exhalant and secretory tissues.

PROP. CCCLXXIV.

Temperance is essential to the cure of spasmodic and convulsive disorders.

* By antispasmodics, I mean stimulating medicines, according to the common acceptation, and not demulcents which are almost always the best antispasmodics.

PROP. CCCLXXV.

Scurvy unattended with inflammation promptly yields to wholesome food, either vegetable or animal, provided its effect be seconded by a pure and dry atmosphere, by light, and by agreeable feelings—active stimulants may accelerate the cure; but if it be complicated with phlegmasiæ, gelatine, albumen, milk, the mucoso-saccharine and the oleaginous articles, should be administered without the addition of any stimulants. Acrid antiscorbutics, bitter and alcoholic substances are then eminently injurious.

PROP. CCCLXXVI.

Since the affection of the gums which sometimes accompanies scurvy is an inflammation, it should be treated at first by antiphlogistics, and afterwards by slightly irritating topical applications; and if there be gangrene, by the specific antiseptics; but it is indispensable to remove the tartar from the teeth. The same remarks are applicable to inflammations of the gums without a scorbutic diathesis; which form is more common than the scorbutic.

PROP. CCCLXXVII.

There are five methods employed for the treatment of intermittent and remittent inflammations: 1st, by antiphlogistics during the hot stage; 2d, by stimulants and tonics during the apyrexia; 3d, by stimulants administered during the hot stage; 4th, by stimulants given on the access of the rigors; 5th, by antiphlogistics during the apyrexia.

PROP. CCCLXXVIII.

Intermittent inflammations yield to bleedings and cold applications during the hot stage, in the spring, when the subject is robust and plethoric and when the disease is recent; in these cases the leeches should be placed as near as possible to the principal seat of the irritation.

PROP. CCCLXXIX.

Intermittent inflammations yield without danger to cinchona and other tonics administered during the apyrexia, when there is no plethora of the system generally, and when the principal organs and especially those of digestion, retain no trace of inflammation after the hot stage, that is, when the fever is not remittent.

PROP. CCCLXXX.

Intermittent inflammations are rarely cured by stimulants administered during the hot stage: this method of treatment rather tends to make the inflammation continued or remittent.

PROP. CCCLXXXI.

Intermittent inflammations are rarely cured by stimulants administered at the accession of the cold stage, because the irritation which they excite augments the intensity of the hot stage. This method seldom succeeds except after the employment of antiphlogistics and in robust subjects in whom the apyrexia is complete.

PROP. CCCLXXXII.

Continued inflammations with periodical exacerbations are cured by antiphlogistics administered during the remission, when some degree of inflammation remains in the viscera after the sweating stage, and especially when this inflammation is sufficiently intense to keep up some degree of pyrexia, that is, when the fever is truly remittent.

PROP. CCCLXXXIII.

The surest method for the certain cure of inflammations with periodical exacerbations, is to treat them at first by antiphlogistics during the hot stage, so as to render the apyrexia complete; to continue this treatment after the paroxysm, if the apyrexia be not complete; to give the cinchona, or rather the sulphate of quinine, and the other tonics during the whole apyrexia; to administer diffusible stimuli at the accession of the rigors, and to return afterwards to cooling drinks when the hot stage is developed.

PROP. CCCLXXXIV.

Bark and stimulants administered whilst there remains any inflammation of the primæ viæ, increase the phlegmasia to an acute and continued form, or they stop the paroxysms and keep up the disease in a chronic form; then irritation and congestion fix themselves in the parenchymatous viscera. It is in this way that the bark produces *obstructions* which are sub-inflammations.

PROP. CCCLXXXV.

Intermittent inflammations abandoned to nature are spontaneously cured when they are slight and the causes

producing them cease to act: under opposite circumstances, they are either aggravated into acute continued inflammations or they degenerate into a chronic continued form, which continues until its termination in *obstructions* and dropsy.

PROP. CCCLXXXVI.

Obstructions of the parenchymatous viscera, (the liver, spleen and lungs,) sometimes supervene on intermittent fevers, without the inflammation of the gastric mucous membrane becoming continued: they are then cured by the bark given during the apyrexia.

PROP. CCCLXXXVII.

When the paroxysms of an intermittent fever are arrested by bark, and uneasiness, visceral engorgements, inappetence and feverishness supervene, these symptoms are owing to the bark having been administered too soon, whilst the primæ viæ was still in a state of irritation, and having produced chronic inflammation of the mucous membrane of the digestive organs. In this case a cure is obtained by antiphlogistics.

PROP. CCCLXXXVIII.

When the suppression of the paroxysms of an intermittent fever is followed by a pathological state without fever, the return of the paroxysm produced by the cold bath and purgatives is useful, if the crisis of the paroxysm removes the irritation of the primæ viæ, so that the apyrexia becomes complete; if this be not the case its return is an evil. In the first instance the bark should be given

during the apyrexia; in the second it is necessary to have recourse to antiphlogistics, which cure the disease or render the apyrexia complete, so that the bark may then be given with advantage.

PROP. CCCLXXXIX.

When the stomach cannot bear the bark in intermittent fever, this remedy should be administered by injections; but if the large intestines be inflamed, the bark can be applied externally only, either as local applications or by frictions in the form of tincture. In this case demulcents should at the same time be given internally; rubefacients are also useful during the apyrexia.

PROP. CCCXC.

The intermittent fevers, termed malignant, ought to be treated like those to which this epithet is not given; except that it is necessary to apply the remedies more promptly.

PROP. CCCXCI.

Dropsy sometimes shows itself at the very commencement of intermittent fevers; commonly it is but the result of their long continuance.

PROP. CCCXCII.

Dropsy produced by an obstruction to the circulation yields to bleedings and to mild diuretics, provided the cause of the obstruction be not incurable. The digitalis is here useful if hypertrophy of the heart be the cause.

PROP. CCCXCIII.

Dropsy produced by the sympathetic influence of a chronic phlegmasia is rarely curable, because this phlegmasia does not occasion dropsy until after having disorganized the part in which it is seated. The treatment consists of the remedies appropriate to the phlegmasia, and of diuretics administered so as not to irritate the digestive organs.

PROP. CCCXCIV.

Dropsy depending upon an accidental deviation of the serous fluids, that is, upon the cessation of the action of the depurative capillaries, yields to the reëstablishment of the transpiration and urinary secretion. Warm vapours and dry warmth to the skin, dry and stimulating baths, (hot sand, skins of grapes, &c.) diuretics and even purgatives cure these; but care must be taken to remove plethora and not to exasperate the inflammations that may simultaneously exist.

PROP. CCCXCV.

Dropsies which result from imperfect assimilation disappear under the use of tonics, warm dry air, light nourishing food, with the proper remedies for scurvy if this disease coëxist. But those which are caused by the abuse of mercury and other mineral substances, sometimes resist, on account of the gastro-enteritis which accompanies, and often assists in producing them.

PROP. CCCXCVI.

Dropsies arising from insufficient aliment, hæmorrhages and other debilitating causes, are cured by tonics, good

food, wine, alcohol and the active diuretics, when no disorganization of the viscera exists; but great caution is necessary to restore the strength of the patient gradually.

PROP. CCCXCVII.

Scrofula commencing at the exterior of the body under whatever form it may appear, may be removed by the free application of leeches. The scrofulous organic habitude which is only the repetition of the irritation from similarity of tissues, will not then be established.

PROP. CCCXCVIII.

The scrofulous disposition or diathesis, that is, the supernormal irritability of the tissues having a gelatinous base, (which always commences externally,) may be removed when not inveterate, by dry air, warmth and light, that is, by qualities of the air the reverse of those which produced it. It yields also to exercise, but only when taken in the open air.

PROP. CCCXCIX.

Stimulant ingesta cure the disposition to scrofula, only when they excite the secretions and excretions, that is, when they produce revulsion; when they do not produce this effect, they exasperate the scrofulous irritation as they do all other inflammations.

PROP. CD.

When stimulating ingesta do not produce revulsion in scrofula, they develope gastro-enteritis and complicate it

with scrofulous irritations of the exterior: this is the tabes mesenterica of authors; and if the lungs contract the irritation, it constitutes the phthisis termed scrofulous.

PROP. CDI.

The inveterate scrofulous diathesis of the exterior of the body, is removed in time by exercise in the open air, by temperance and wholesome food, provided the irritants are so managed as not to develope inflammation in the viscera.

PROP. CDII.

In the inveterate scrofulous diathesis, exutories are useful, provided their effects be seconded by proper exercise and the irritation be not repelled towards the interior by the abuse of stimulants.

PROP. CDIII.

Osteo-malacia is an irritation of the osseous system depending upon the same causes as scrofula, and is cured in the same manner.

PROP. CDIV.

Chronic pneumonia, (phthisis,) is more rare than chronic gastro-enteritis, (tabes mesenterica,) in scrofulous and rickety children, because the lungs in early life are less disposed to inflammation than the digestive organs: it is very important then, that this disposition should not be increased.

PROP. CDV.

Syphilis is an irritation, which, like scrofula, affects the exterior of the body, and its repetition which forms the

diathesis is prevented by attacking it at its commencement by local antiphlogistic applications and especially by numerous leeches.

PROP. CDVI.

Inveterate syphilitic irritation yields to antiphlogistics and abstinence; but as this mode of cure is tedious, mercury and sudorifics are preferred.

PROP. CDVII.

Mercury, sudorifics and other stimulants cure syphilis solely by producing a revulsion to the depuratory capillaries; but it is necessary that they should be assisted by abstinence, for too copious hematosis keeps up the syphilitic irritation.

PROP. CDVIII.

The stimulants called antisyphilitic ought to be administered internally with great caution; otherwise they produce gastro-enteritis which reäcts upon the external syphilitic irritations and revulsion does not take place, or the irritation is invited to the viscera and eventually disorganizes them.

PROP. CDIX.

When antisyphilitic stimulants have developed gastro-enteritis, and the syphilis is not cured, it will not yield except with the gastro-enteritis to a long perseverance in an antiphlogistic treatment; but if the gastric viscera be disorganized or the patient exceedingly feeble, a cure is impossible.

PROP. CDX.

Gastric phlegmasia induced by the abuse of antisyphilitic medicines is easily transmitted to the lungs, and phthisis is the consequence, if an antiphlogistic treatment be not promptly and efficiently resorted to.

PROP. CDXI.

Mercurial stimulants applied locally to external syphilitic irritations, always exasperate them when they are intense, and when they are feeble they cannot cure them except by opposing one irritation to another. But this fact is common to all the inflammations of the exterior of the body as well as to hæmorrhages.

PROP. CDXII.

The predisposition to syphilis is the same as that to scrofula; and those who have this predisposition are more difficult to cure than others.

PROP. CDXIII.

When syphilis occurs in those who are predisposed to gastritis, it should be treated by antiphlogistics as well internally as externally; for if stimulants be given to them internally, the stomach becomes super-irritated and sometimes even the syphilis is left uncured.

PROP. CDXIV.

The cutaneous irritations termed herpes, ought to be treated by local bleedings, emollient external applica-

tions, and refrigerants internally, as long as there exists inflammation of the skin; when a sub-inflammatory irritation alone remains, stimulants may be applied to the skin, especially preparations of sulphur; the sub-inflammation should be preserved from the action of the air, by an emollient and sedative or even narcotic plaster, and revulsion may be attempted by sudorifics, diuretics and purgatives; but it is not necessary to urge the internal stimulation so far as to produce gastro-enteritis, for this last would cause the cutaneous affection to reäppear, or disorganize the digestive organs. This is called the metastasis of herpes to the internal parts. All these remarks may be applied to what is called the Grecian or tubercular leprosy.

PROP. CDXV.

In the cures of phlegmasiæ, sub-inflammations, ulcerations, in a word, of all irritations of the exterior of the body, effected by astringents, narcotics, rubefacients, and caustics, in cases of erythema, ophthalmia, blennorrhagia, itch, herpes, scrofula, syphilitic affections, &c., we see only morbid irritations yielding to the irritation of medicines. But these cures obtain only when the primary irritations are slight. If they be of a high grade, the irritation from medicines augments their intensity and the danger of disorganization is imminent. It is thus that eroding ulcers or cancers are often produced. The treatment of irritations by irritants ought therefore to be always preceded by the use of antiphlogistics; otherwise we play at double or quits.

PROP. CDXVI.

When the external irritation attacked by irritants, is intense, habitual, and accompanied with a copious discharge of fluids, it either augments without changing its seat, or it is replaced by an increased action of the depurative secretories, or finally it is changed into a morbid irritation of the viscera: these two last are cases of revulsion, but one is favourable and the other injurious.

PROP. CDXVII.

The cure of intense inflammations, such as puerperal or simple peritonitis, acute rheumatism, pneumonia, &c. by tartar emetic, calomel, mercurial frictions, opium, oil of turpentine, or drastic purgatives, is not the effect of direct sedation; it results from the awakening of a great number of organic sympathies which open one or more doors to revulsion; moreover this does not take place unless critical evacuations occur, and if the stimulant be too weak to produce this revulsion, or the morbid irritation too intense to be displaced, the disease is augmented and acute or chronic disorganization is the result. This mode of treatment should therefore be preceded by the use of antiphlogistics, and even with this precaution it is a game of double or quits.

PROP. CDXVIII.

It is rare that the cure of acute morbid irritations, obtained by violent stimulating revulsives, is not followed by a chronic morbid irritation, and especially by gastro-enteritis. It is thus that many cases of hypochondriasis are produced, for the excessive stimulation of the stomach

produces an accumulation of sensibility in this viscus and gives more activity to the sympathies which connect it with other organs. In this case one disease is merely changed for another.

PROP. CDXIX.

Poisonings by acrid vegetables, by corrosive mineral substances, by concentrated acids, by alkalies, and by cantharides, are gastro-enterites, which tends to ulceration, if the ulceration be not the immediate consequence of an eschar caused by these substances. The treatment is then that for common inflammations, but acids must not be administered.

PROP. CDXX.

Poisonings by narcotics are gastro-enterites without corrosion at their commencement, but attended by a repetition of the irritation in the encephalic apparatus, which produces congestion, intoxication, delirium, convulsions, and afterwards ab-excitation, and death. They should be treated by acidulated drinks, and without bleeding, so long as considerable stupor exists, and by stimulants when the state of ab-excitation has succeeded; but when the stupor is dissipated, the inflammation remaining should be treated like that which is produced by the action of acrid substances, for its results may be the same. Insanity is a frequent sequela.

PROP. CDXXI.

Poisonings by lead, (colica pictonum,) are gastro-enterites of different degrees of violence. In the lowest de-

gree, which is unaccompanied with fever, it may be cured by the revulsion produced by emetics and purgatives as well as the gastro-enterites of the same degree; but this treatment often leaves behind a chronic phlegmasia of the gastro-intestinal mucous membrane. In the degree attended by fever, lead colic should be treated just as ordinary gastro-enteritis of the same degree. Hence it results that the only treatment that can inspire confidence is the antiphlogistic, aided by revulsion to the skin by tepid baths and by different aromatic, fœtid, or rubefacient plasters, but neither vesicatories or escharotics, made according to the formula of Dr. Ranque.

PROP. CDXXII.

The effects of poisoning by the ingestion of putrid flesh, of spoiled fish, of mushrooms, are gastro-enteritis accompanied with cerebral congestion and stupor, and which are promptly followed by prostration: they should be treated by vomiting produced by demulcent drinks, and by mucosaccharine purgatives and the neutral salts when the poison is still in the gastric passages; afterwards by acidulated drinks, enemata and lotions, and by leeches to the epigastrium and neck, employed with circumspection and regulated by the effects. The cure should be completed by an antiphlogistic regimen.

PROP. CDXXIII.

Debility is *most frequently* the product of irritation, and *sometimes* constitutes the whole disease.

PROP. CDXXIV.

Imperfect respiration is the most powerful cause of debility: it necessarily produces ab-irritation; but it is sometimes preceded by irritation. Deficiency of external warmth and nourishment occur only subsequently.

PROP. CDXXV.

In excessive spontaneous hæmorrhages even without inflammation, debility always succeeds to the irritation, and finally becomes the principal disease. But in traumatic hæmorrhages, it does not depend upon irritation, and it is this which furnishes the principal indication.

PROP. CDXXVI.

The paralysis which succeeds the cerebro-spinal affections is always the product of irritation: it furnishes then only partial or local indications.

PROP. CDXXVII.

The paralysis which succeeds to excessive losses of non-sanguineous fluids depends always on irritation; but it soon affords particular indications.

PROP. CDXXVIII.

Whatever may be the debility attendant on irritations, these last alone furnish indications so long as they are sufficiently violent to be exasperated by the ingestion of food and stimulating medicines. As soon as the

contrary is the case, the debility furnishes indications which are combined with those which depend on irritation; finally, when this last has ceased, the debility becomes the principal disease; but the irritability of the organs requires great prudence in the employment of stimulants.

PROP. CDXXIX.

Convulsions and pains, whatever name they may receive, leave behind them a debility which sometimes furnishes the sole indications of treatment; but more frequently they are mixed, because a portion of the irritation remains in the organs, which excited the convulsions and pains.

PROP. CDXXX.

The debility which succeeds to venereal excesses is almost always accompanied with irritation and congestion of one or several viscera.

PROP. CDXXXI.

External cold, when excessive, produces a debility which advances from the skin to the locomotive apparatus, as well as to the vessels and nerves of the periphery of the body and from them to the viscera, from whence death may result: in these cases debility constitutes the principal disease. But if the cold is moderate, the vital power excites on the periphery or in the viscera an irritation which becomes the principal disease and furnishes the sole indications of cure when the action of the cold has ceased.

PROP. CDXXXII.

Paralysis of the limbs depending on concussion is a product of irritation; if this last continues, the indications of treatment are furnished by it; but if there be no evidence of its continuance, the debility becomes the principal disease.

PROP. CDXXXIII.

There are some modifiers among the external agents which extinguish life without producing any appreciable reäction; then debility constitutes the sole disease; but these cases are much more rare than has for a long time been supposed.

PROP. CDXXXIV.

Miasmata arising from the decomposition of dead animal or vegetable matters, and emanations from the body of sick or even healthy persons collected in a very confined space, are sometimes sufficiently deleterious to occasion debility, and even death, without reäction; but whenever they produce pain and fever, an irritation is established in the gastro-intestinal mucous membrane, and often by sympathy in the other viscera, and it is this irritation which furnishes the principal indications: this is, what constitutes typhus, and then it is produced by infection. (See propositions on the treatment of acute gastro-enteritis.)

PROP. CDXXXV.

Every person affected with typhus, (yellow fever is

here included,) may himself become a focus of infection for those who are well, and communicate to them his disease if he be confined in a close apartment, and the emanations which proceed from him are allowed to stagnate around him: this is febrile contagion; but if he be placed in a healthy, well-ventilated and properly cleaned room, this communication will be difficult. Are pestilential typhus and variolous fevers the only ones which can communicate contagion in spite of these precautions?

PROP. CDXXXVI.

Delivery is sometimes followed by debility which progressively increases till death takes place, and which furnishes the only indications of cure, although it be the product of irritation.

PROP. CDXXXVII.

Syncope is the effect of the interruption to the circulation of the blood flowing to the brain; it always affords an indication for stimulants; but after recovery from this condition, contrary indications are presented, when the cause of the interruption of the blood is an irritation.

PROP. CDXXXVIII.

Asphyxia depending upon the inhalation of deleterious gases, is an ab-irritation; but when it is removed, an irritation in the principal organs always remains.

PROP. CDXXXIX.

The debility which succeeds to the depressing passions, such as terror, &c. always supposes an irritation

of the great viscera, which then become the principal disease.

PROP. CDXL.

The debility of scurvy does not furnish the principal indications of treatment except when inflammation simultaneously exists.

PROP. CDXLI.

When extremely violent gastro-enteritis is prolonged to a certain point, the debility furnishes indications which must be fulfilled by the administration of nourishment, to prevent death from inanition; for an epoch arrives at which digestion is possible, notwithstanding the continuance of the phlogosis, without exasperating this inflammation.

PROP. CDXLII.

Persons who have long had a less degree of embonpoint and strength than comports with their constitution, require a long time to be restored to that condition again. They cannot support a certain quantity of blood without experiencing the effects of plethora, and being exposed to inflammations.

PROP. CDXLIII.

The amount of strength diminishes in diseases of irritation, because the precipitation of the organic movements causes a predominance of decomposition and elimination over composition and absorption. Certain cases of bu-

limial gastritis, in which the embonpoint and strength increase notwithstanding the irritation, must, however, be excepted.

PROP. CDXLIV.

The indication to restore the strength by abundant nourishment, is not derived either from the emaciation or debility, but entirely from the rapidity with which assimilation takes place, and the predominance of composition over decomposition.

PROP. CDXLV.

The indication to excite the stomach by tonics is not derived from either debility or emaciation, but rather from the paleness and breadth of the tongue, as well as the sensation of languor, and the slowness of the digestion, when food but little stimulating has been used. This indication is also derived from pains in the stomach, eructations, borborygmi, and colic, which accompany this kind of digestion, when these symptoms disappear upon the use of more stimulating food.

PROP. CDXLVI.

General debility unattended with phlegmasia requires only nourishing food, and a moderate quantity of wine, if digestion be performed. If it be difficult, bitters are required.

PROP. CDXLVII.

Debility accompanied with phlegmasia elsewhere than

in the alimentary canal, requires food which is light and leaves little residuum, if the inflammation be acute; but all stimulants are proscribed whose irritation would be repeated in the inflamed organ; if the phlegmasia be chronic, this debility requires substantial food, but always of easy digestion. Tonics in these cases are useful only in small doses, and continued but for a very short time.

PROP. CDXLVIII.

Debility with a catarrh which exhausts by a too copious expectoration and unattended with fever, requires substantial and easily digestible food, with astringent tonics very cautiously administered. Such are the bark, the lichen islandicus, and the acetate of lead. Revulsives are here also indicated, but suppuration should not be long kept up.

PROP. CDXLIX.

Debility with acute gastric phlegmasia requires the treatment indicated for this inflammation; but that which accompanies chronic gastritis requires farinaceous food, and even milk and the white meats, with attention to refresh the stomach with small portions of some demulcent drink when this organ becomes heated by the process of digestion. (See the treatment of these diseases.)

PROP. CDL.

Debility with acute colitis requires only the treatment indicated for this latter disease; but in chronic cases, it requires the farinaceous articles of diet deprived of every portion that can leave a residuum in the colon, and the

moderate use of red wine to enable the stomach to retain the food; for the irritation of the colon calls towards this intestine the aliment before it is assimilated, and it then acts as a purgative.

PROP. CDLI.

The debility produced by excessive hæmorrhages requires gelatinous, albuminous, and farinaceous food, with a little red wine, some astringents and permanent tonics; but it does not admit of high-seasoned food. The diffusible stimulants are not proper except immediately after profuse hæmorrhages.

PROP. CDLII.

The debility succeeding to violent convulsions, and unattended by gastritis, requires the employment of the same nourishment as that which results from hæmorrhages; but it is necessary to join with it some diffusible antispasmodics.

PROP. CDLIII.

The debility and exhaustion resulting from excessive muscular fatigue demands aliment affording much nourishment in a small bulk, and a moderate quantity of wine and even of alcohol, for the sensibility is considerably diminished in the nervous apparatus of relation; but when the fatigue has produced gastric irritation, the debility should be treated solely by drinks which are nourishing without being stimulating.

PROP. CDLIV.

When, in gastro-enteritis produced by excessive muscular exertion and by the administration of stimulants, the employment of which is often abused in these cases, debility predominates, bleedings should be practised only with moderation, and should always be local.

PROP. CDLV.

The extreme debility consequent on very prolonged abstinence, should be treated by very moderate quantities of farinaceous decoctions, milk porridge, light broths, &c. which should be increased with great circumspection, for indigestion and gastritis are very easily produced.

PROP. CDLVI.

The debility induced by cold is to be treated successively by frictions to the external surface, with snow, ice, cold water, water slightly warmed, &c.; by diffusible stimulants, alcohol, and medicated waters in graduated doses, given internally; but it is necessary to have recourse to demulcents, and even to bleedings and abstinence, upon the supervention of febrile heat, otherwise inflammation of the viscera may be developed.

PROP. CDLVII.

Debility occasioned by imperfect respiration is cured by the reëstablishment of this function; for which a variety of means may be put into practice according to the causes which have intercepted the passage of the air. Thus bleed-

ing is proper in pulmonary phlegmasiæ, in strangulation from mechanical causes, in angina, aneurism, &c. if the vessels be too full; whilst both internal and external stimulants are useful after submersion and in all cases of asphyxia, which besides require the introduction into the lungs of respirable air.

PROP. CDLVIII.

When at the commencement of an acute disease, there exists extreme debility and great depression of spirits, it is a sign that the inflammation occupies a large portion of the respiratory or digestive organs, or both at the same time, and that the encephalic apparatus is super-irritated. At this period, if a general or local bleeding proportioned to the strength and symptoms, instead of increasing the strength, diminishes it, depletion should not be repeated, for it proves that the viscera whose office it is to introduce the preservative material of life into the system, have not performed this function, and that consequently, the system has no longer the means of repairing any great losses. Demulcents internally, cold and counter-irritation externally, are the feeble resources remaining to medicine in these melancholy cases. (See the propositions upon typhus fevers and gastro-enteritis.)

PROP. CDLIX.

Cyanosis is sometimes produced by chronic gastro-enteritis and is cured with it.

SECTION IV.

COROLLARIES.

PROP. CDLX.

Empirical medicine, which consists in storing in the memory certain symptoms which have been observed, and certain remedies that have been useful or injurious, without attempting any physiological explanation, is impracticable; because the lesion of a single organ produces a host of different symptoms which combine with those dependent on several other organs, in degrees so various, that it is impossible to meet in nature groups of symptoms, absolutely similar to those taken as models. This confusion cannot be remedied except by referring the symptoms to the organs which produce them.

PROP. CDLXI.

To practice medicine with success, it is not sufficient merely to refer the symptoms to particular organs, it is necessary to be able to determine in what respect these organs differ from their healthy state, that is, the nature of the disease.

PROP. CDLXII.

The nature of the disease ought to furnish the physician the indications of cure. It is ascertained by a knowledge; 1st, of the modifying agents which have exalted, diminished or deranged in any manner the ac-

tion of the organ primarily affected; 2d, by the influence of this organ upon other organs; 3d, finally, by the knowledge of the modifying agents which can restore the equilibrium or at least diminish the intensity of the disease. The nature of diseases is derived then by the physician from the appreciable physiological modification of the organs.

PROP. CDLXIII.

The groups of symptoms which are given as diseases without referring them to the organs on which they depend, or even in referring them to the organs, but without determining the nature of the physiological aberration of these latter, are metaphysical abstractions which do not represent a morbid condition that is constant, invariable and of which we can be sure of finding the prototype in nature; they are then artificial entities, and all those who study medicine by this method are *ontologists.*

PROP. CDLXIV.

To consider imaginary morbid entities as evil powers which act upon the organs and modify them by producing such or such disorder, is to take effects for causes; is to practice ontology.

PROP. CDLXV.

To consider the succession of symptoms which has been observed as the necessary and invariable progress of a disease, and to deduce from it characters essential to diagnosis, and consequently to the treatment, is to create an imaginary entity; since the affections of the

organs differ according to their irritability and sensibility, and the modifying agents that act upon them; it is making it impossible for us to treat disease before its termination, without being in contradiction to our own principles. This is also to practice ontology.

PROP. CDLXVI.

To apply remedies to an imaginary morbid entity, without appreciating their effects on the organs which receive them, or upon those which sympathize with these organs, is to cure or exasperate a disease without knowing the physiological reason of it.

PROP. CDLXVII.

He who cures a disease without having correctly appreciated the physiological modifications, by means of which he has effected this cure, has no certainty of either recognising or curing the same disease when it again presents itself to his notice; whence it necessarily results that neither the success nor the failure of ontologists can serve to render them good practitioners, nor enable them to teach others to be such.

PROP. CDLXVIII.

The propositions CDLXI, CDLXII, CDLXIII, CDLXIV, CDLXV, CDLXVI, CDLXVII, explain why medicine has remained a vague and uncertain science until our days.

ERRATA.

Page 81,	line 12	from bottom,	for "most," read best.
95,	23	top,	*et seq.* for "resorbed," read absorbed.
143,	26 & 27	"	for "insanities," read cases of insanity.
160,	2	"	for "pain," read ileus.
171,	18	"	*et seq.* for "resorption," read absorption.
185,	21	"	for "anylists," read analysts.
227,	10	"	for "hypochondria," read hypochondriasis.
274,	12	"	for "aneurism," read aneurism of the heart.
295,	8	"	for "aortites," read cases of aortitis.
302,	9	bottom,	after membranes, insert or.
351,	14 & 19	top,	for "hypochondria," read hypochondriasis.
375,	9	bottom	for "transitory," read flying.
433,	5	"	for "what is the irritation," read where the irritation is seated.
483,	10	"	for "vegetable astringents," read vegetables which are astringent.

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THE END.

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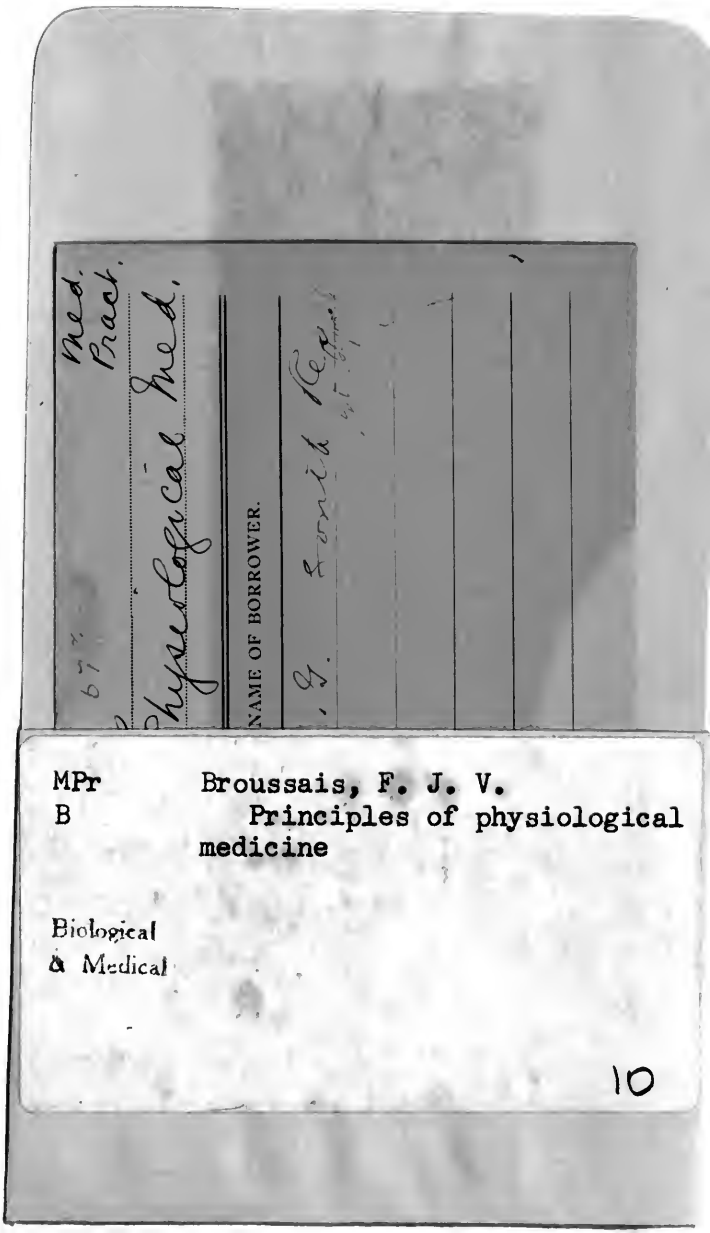

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